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U.S. DEPARTMENT OF HEALTH AND HUMAN SERVICES
Public Health Service • National Institutes of Health • National Cancer Institute

HE 20. 3173/2:

ENVIRONMENTAL FACTORS: POLLUTION

1. SOURCE OF DRINKING WATER AT HOME AND SITE-SPECIFIC CANCER INCIDENCE IN WASHINGTON COUNTY, MARYLAND.

Wilkins JR, Comstock GW
Dept. Preventive Medicine, Ohio State Univ., 410 West Tenth Ave., Columbus, OH, 43210
Am J Epidemiol; 114(2):178-190 1981

A nonconcurrent prospective study was conducted to investigate the postulated re lationship between organic chemical by-products of water chlorination and risk of human cancer. Vital records and nonofficial census data available for each of nearly 31,000 study subjects were used to compute selected sex- and site-specific cancer incidence rates in a well-defined county population. Age, socioeconomic status, smoking history, source of drinking water at home, and other individual characteristics of the study population were examined in relation to the cancer rates. The drinking water source variable consisted of three historical cohorts, each distinguished by a different degree of exposure to chloroform and other chlorination by-products. Incidence rates for cancer of the bladder among men and for cancer of the liver among women were nearly twofold higher in the drinking water cohort that had been supplied chlorinated surface water at home when compared to the cohort with a history of consumption of unchlorinated ground water. The differences, however, were not statistically significant. A complementary mortality study also suggested an association of chlorinated water with cancer of the liver and urinary tract. The findings in Washington County indicate the need for further studies of individuals with different histories of exposure to chlorinated and unchlorinated drinking water. (Author abstract) (49 Refs)

2. RELATIONSHIP OF THE RAW WATER QUALITY TO MUTAGENS DETECTABLE BY THE AMES SALMONELLA/MICROSOME ASSAY IN A DRINKING-WATER SUPPLY.

Grabow WO, Van Rossum PG, Grabow NA, Denkhaus R
Natl. Inst. Water Res., Council for Scientific and Industrial Res., P. O. Box 395, Pretoria 0001, South Africa
Water Res; 15(9):1037-1043 1981

The relationship of mutagens detectable by the Ames test to other properties of the Parys, South Africa drinking water supply before and after conventional treatment was studied. The raw water intake was from the Vaal River, subject to pollution with partially purified waste water (nonchlorinated) containing high concentrations of mutagens. Information was obtained on mutagen activity, mutagen formation during conventional water treatment, properties of raw water affecting mutagen concentration in the treated water, and the relation of Ames test results to chemical quality parameters. Mutagens formed during treatment consisted mainly of neutral organic compounds inducing frameshift mutations without liver activation. Although no health hazard was inferred, the results make evident the need for surveillance of potential carcinogens in conventionally treated water taken from a polluted source. (33 Refs)

3. EFFECT OF AIR POLLUTION ON LUNG CANCER MORBIDITY.

Skvortsova NN, Irodova EV
A. N. Sysin Inst. General and Communal Hygiene, Moscow, USSR
Gig Sanit; (7):9-12 1981

Lung cancer morbidity was studied in three cities with different level of air po llution. The level of benzo(a)pyrene in the air of cities A and B was 18.3x and 3.5x greater than that in the air of city C. The air of city B was also polluted with various toxic compounds (sulfur dioxide, nitric oxide, phenol, chlorine, hydrogen sulfide) in concentrations greater than the max permissible levels. Lung cancer morbidity in cities A and B was 1.7x and 1.4x greater than that in city C. These findings indicate that air pollution with toxic compounds increases the risk of lung cancer. (16 Refs) (In RUS)

ENVIRONMENTAL FACTORS: COMMERCIAL PRODUCTS

4. LARYNGEAL CANCER: AN EXPLANATION FOR THE APPARENT OCCUPATIONAL ASSOCIATION.

Chovil A
216 Northwood Drive, Willowdale, Ontario M2M 2K4, Canada
Med Hypotheses; 7(7):951-956 1981

The hypothesis that laryngeal cancer occurs as a result of exposure of the larynx to lipid soluble carcinogenic agents that can penetrate the squamous epithelial covering is proposed. Alcohol and vocal abuse may have promoting effects. In the presence of concomitant carcinogenic exposure, the changes may progress to keratoses and ultimately to premalignant or malignant states. (22 Refs)

ENVIRONMENTAL AND OCCUPATIONAL FACTORS: RADIATION

5. RADIATION AND ROCKY FLATS IN PERSPECTIVE.

Hunt DC, Crites TR, Lagerquist CR
No affiliation given
Colo Med; 78(4):111-114 1981

Plutonium (Pu) and Americium are processed at the Rocky Flats plant near Denver, Colorado. All employees wear dosimetry badges. About 800 workers are exposed to more than background radiation levels. The 180 workers handling Pu were exposed to an av of 875 millirem (mrem)/yr for the last 5 yr; the av was less than 20% of the max permissible exposure level (MPEL: 5,000 mrem/yr). For the other 260 radiation workers, the av was 5.5% of the MPEL (267 mrem/yr). The lifetime lung burden of Pu (8 hr/day, 5 days/wk x 50 yr) is 16 nanoCi (nCi). About 4,000 routine whole-body counts were performed in 1980, including 90 counts after accidental Pu release. Four workers retained measurable amounts of Pu in their lungs (all at less than 10% of the pulmonary MPEL). All injuries that break the skin are measured for x-ray emissions and washed if the count is positive. In 1980, 259 wound counts were obtained; all 14 positive counts became negative after washing. All employees accumulating greater than 50% of the max permissible systemic burden (40 nCi; 26 workers since

plant operations began in 1952) are placed on a restricted radioactivity status; 49 others have accumulated 25-50% of the max systemic burden. The procedures used to minimize air, water, and soil radioactivity from the plant are discussed. A typical coal-fired power station, a clay mine, patients given diagnostic or therapeutic radioactive materials, and the background radioactivity of the Front Range of the Rockies emit more radiation than the Rocky Flats plant. The risks of death from lung and bone cancer caused by natural background radiation alone, in the Denver area, are 6,250x and 1,000x greater, respectively, than those expected from plant operations. The area nearest the plant has the same cancer incidence as the area farthest from the plant. The higher rates in the intervening areas are attributable to the normal differences between the center and suburbs of a metropolitan area. (26 Refs)

6. URANIUM MILL TAILINGS AND RADON.

Hanchey LA
Sandia Natl. Labs., Albuquerque, NM
Uranium Mill Tailings and Radon. Available from National Technical Information Service, Springfield, VA, as SAND-80-2142:, 30 pp., 1981.

The major health hazard from uranium mill tailings is presumed to be respiratory cancer resulting from the inhalation of radon daughter products. A review of studies on inhalation of radon and its daughters indicates that the hazard from the tailings is extremely small. If the assumptions used in the studies are correct, one or two people per yr in the US may develop cancer as a result of radon exhaled from all the Uranium Mill Tailings Remedial Action Program sites. The remedial action should reduce the hazard from the tailings by a factor of about 100. (Author abstract)

7. BRONCHO-ALVEOLAR LAVAGE IN URANIUM MINERS.

Robalo Cordeiro AJ, Bahanha MF, Carmo JG, Gaspar E, Lima MA, Rosa MA
Universite de Coimbra, 3049 Coimbra, Portugal
Rev Fr Mal Respir; 9(3):241-256 1981

The effects of tobacco smoking plus occupational exposure to uranium were studied in 32 uranium miners (M: 16 smokers (S), and 16 nonsmokers (NS)) and 12 controls (C: 6 S and 6 NS) through the use of broncho-alveolar lavage (BAL). The percentages of liquid in the fluid obtained by BAL was significantly different in the two groups of M. Differences in the number of macrophages (MA) were observed in M and C. The MA of S showed characteristics similar to other smoking populations in this group of M. In general the size of the MA of S were larger than those of NS. The viability of MA in the various groups was studied. No statistically significant differences were observed between the groups analyzed for phagocytosis by MA. The results did not permit the determination of differences between MA of M and C with regard to adherence to glass. The migration of MA was variable in the groups studied. No significant differences were observed between S and NS with regard to peripheral blood lymphocytes. The phytohemagglutinin stimulation of lymphocytes was generally more elevated in those of the blood as compared with those of the BAL fluid, with significant differences in the NS. The IgG of the BAL fluid of M was more elevated in S and was significantly different from control levels. IgA levels were decreased in the smoking group of M. No variation in BAL fluid albumin or total proteins was observed for the four groups. The results indicated that there were no demonstrable changes in cellular function in either S of NS in M subjected to the ambient radiation of a uranium mine. (37 Refs) (In FRE)

8. A FEASIBILITY STUDY OF THE BIOLOGICAL EFFECTS OF FALLOUT ON PEOPLE IN UTAH, NEVADA, AND ARIZONA.

Hoffman DA, Harlow CW, Tully MJ
Bureau Radiological Health, Rockville, MD
A Feasibility Study of the Biological Effects of Fallout on People in Utah, Nevada, and Arizona. Available from National Technical Information Service, Springfield, VA, as PB81-187692:, 21 pp., 1981.

The objectives of the study described in this paper were to determine the feasibility of reopening the Utah Thyroid Study that was conducted from 1965-68. It was designed to ascertain three things: (1) if the study population can be obtained, (2) if the records can be linked with cancer incidence in exposed and unexposed survey groups, and (3) if the basic records from the previous study are available in such form as to permit further study. The study was conducted in direct response to both legislative and executive concern over possible health effects from nuclear weapons testing at the Nevada Test Site in the 1950's. Regarding the first objective, a sample of the original study group was traced successfully, through one contract, indicating that a full-scale followup of the entire cohort is feasible. Regarding the second objective, linkage has been successfully completed, through a second contract, between the original cohort records and the Utah Cancer Registry and the Rocky Mountain Data System. Regarding the third objective, the basic records from the original study were found to be limited as to exposure information. Therefore, while useful and important studies may be possible to detect existence of health problems in exposed individuals, definitive epidemiologic studies cannot be done because of limitations in exposure information. Three options are presented and their various strengths and weaknesses are considered. (Author abstract)

9. ASPECTS OF ENVIRONMENTAL RADIATION AND DOSIMETRY CONCERNING THE HIGH BACKGROUND RADIATION AREA IN CHINA.

High Background Radiation Research Group
(c/o W. Luxin) Lab. Industrial Hygiene, Ministry Public Health, 2 Xinkang Street, Peking, People's Republic of China
J Radiat Res (Tokyo); 22(1):88-100 1981

The study of the health status of residents of Yangjiang County, Guangdong Province, China, an area where the radiation level is about three times that of neighboring areas, is reported. Between 1972 and 1979 no significant difference was observed between high background and control areas with regard to detrimental effects, except perhaps chromosome aberrations. Chemical and gamma-ray spectrome tric analyses of the contents of radionuclides in control and high background areas indicated that natural radionuclides were in normal ranges in the former areas while increased by factors of five for uranium and radium and 6-7 for thorium in the latter area. Environmental radiation exposure rates in the high background area fluctuated from 15 to 64 microrads (uR)/hr in the fields, and from 32 to 140 uR/hr in the rooms, as compared with control areas where the values were 5-17 uR/hr in the field and 10-56 uR indoors. The daily intake and localization of radionuclides were determined. 222-Radon and 220-radon activities were determined in exhaled breaths. 228-Radium levels in human teeth were also analyzed. Radiation doses to bone marrow and bone surfaces were estimated. (7 Refs)

10. RADIOACTIVITY IN DRINKING WATER.

Cothern CR
Office of Drinking Water, Environmental Protection Agency, Washington, DC
Radioactivity in Drinking Water. Available from National Technical Information Service, Springfield, VA, as PB81-192833:, 79 pp., 1981.

This general overview is designed to assist those involved with public health and drinking water to better understand, interpret and implement EPA's regulation for radioactivity in drinking water. In this presentation the general nuclear properties are shown using naturally occurring isotopes such as radium, radon and uranium as examples. The units of radio-activity (curie, rad and rem) are explained and demonstrated in describing natural radiation; in our surroundings and bodies as well as man-made radiation from medical x-rays, TV, fallout, industrial uses and nuclear power plants and other sources. The health effects discussed include birth defects, genetic damage, cancers, leukemias and others. Several specific examples are given in each disease area as well as their relative importance or rate of occurrence. The risk (in deaths/million people exposed/yr) is tabulated for radioactivity and compared to several other cases including disease, accidents and weather. Possible methods for reducing the radioactivity in drinking water are described. Flow charts are provided that show how to interpret the radiation regulations for drinking water. (Author abstract)

11. PROBLEMS IN ASSESSING THE CANCER RISKS OF LOW-LEVEL IONIZING RADIATION EXPOSURE. VOLUME 1 AND VOLUME 2.

General Accounting Office Energy and Minerals Division
Energy and Minerals Div., General Accounting Office, Washington, DC
Problems in Assessing the Cancer Risks of Low-Level Ionizing Radiation Exposure. Volume 1 and Volume 2. Available from Technical Information Service, Springfield, VA, as HRP-0902935/6 and HRP-0902936/4:, 777 pp., 1981.

After decades of research, important questions remain unanswered about the cancer risks of low-level ionizing radiation exposure. With the increasing use of materials and processes that prod uce ionizing radiation, it has become more important to resolve these questions. Medical diagnosis and therapy, mining, certain building materials, fallout from nuclear weapons tests, and the nuclear power cycle are among the many sources of ionizing radiation. The uncertainties in this area pose particular problems for Federal agencies in deciding how best to spend limited research dollars. GAO believes that continued Federal research is necessary, and offers recommendations to strengthen this effort. (Author abstract)

12. MEDICAL IRRADIATION IN JAPAN - STOCHASTIC RISK ESTIMATION AND ITS REDUCTION.

Hashizume T
Div. Physics, National Inst. Radiological Sciences, 9-1 Anagawa 4-Chome, Chiba Shi 260, Japan
Nippon Igaku Hoshasen Gakkai Zasshi; 41(5):445-474 1981

Nationwide surveys have been carried out on medical uses of ionizing radiations and radioisotopes in Japan since 1957. The recent data showed that the annual frequency of diagnostic X-ray examinations and the annual number of radiographs was about 95 million and about 340 million, respectively, in 1979, and that the annual frequencies of other radiological procedures were about 0.54 million for administrations of radiopharmaceuticals in 1977, about 0.077 million for radiotherapeutic treatments in 1978, about 33 million for chest mass screenings in 1975, about 4.1 million for stomach mass screenings in 1975 and about 100 million for dental x-ray examinations in 1980, respectively. In Japan, the radiological examinations, particularly x-ray diagnostic examinations go on increasing in frequency. The aim of medical and dental radiology being to provide max benefit to the population served, any increase in frequency of radiological examinations must be justified. With increasing emphasis in recent yr on the somatic effects of radiations, somatic risks to an individual and the population from medical irradiations were estimated using risk factors determined from the data on excess deaths due to leukemia and malignant diseases for atomic bomb survivors in Nagasaki. The stochastic risks to the whole population of Japan were estimated using the population doses such as the genetically significant dose and risks from radiological procedures. In order to reduce patient exposures as low as reasonably achievable, the physical and biological studies were made on the possibility of dose reduction in the specific x-ray diagnoses. The results of risk-benefit and cost-benefit assessments showed that for all the x-ray diagnoses, particularly for stomach mass screening and other x-ray radiographys of digestive organs, the uses of image intensifier systems and higher sensitive recording systems should be urgently promoted, and that education in patient protection for radiologists and radiographers, research and development of x-ray diagnostic technology, and physical and biological studies on the reduction of patient exposures should be actively encouraged. (Author abstract) (58 Refs) (In JPN)

13. PERSONNEL EXPOSURE TO RADIATION AT SOME ANGIOGRAPHIC PROCEDURES.

Gustafsson M, Lunderquist A
Dept. Radiation Physics, Univ. Hosp., S-221 85 Lund, Sweden
Radiology; 140(3):807-811 1981

Personnel exposure to radiation was investigated during radiological procedures where x-ray shielding is particularly difficult. Ten percutaneous transhepatic cholangiographies, 4 percutaneous transhepatic portographies, and 4 coronary angiographies are included in the study. Exposure to radiation was measured at several anatomical sites for both the radiologist and the assisting nurse. Effective dose equivalents as proposed by the International Commission on Radiological Protection (ICRP) were estimated from the registered absorbed doses. (Author abstract) (18 Refs)

OCCUPATIONAL FACTORS: SPECIFIC AGENTS OR INDUSTRIES

14. MAGNETIC LUNG MEASUREMENTS IN RELATION TO OCCUPATIONAL EXPOSURE IN ASBESTOS MINERS AND MILLERS OF QUEBEC.

Cohen D, Crowther T
American Public Health Assoc., Washington, DC
Magnetic Lung Measurements in Relation to Occupational Exposure in Asbestos Miners and Millers of Quebec. Available from National Technical Information Service, Springfield, VA, as PB81-177370:, 50 pp., 1981.

Fe304 particles (magnetic) are often attached to asbestos fibers (non-magnetic) in the primary asbestos industries; therefore, a measurement of Fe304 could help determine the amount of asbestos in the lungs of workers in these industries. As a first assessment of this method of determining retained dust,

magnetic measurements were made of the amount of Fe304 in the lungs of 115 miners and millers of chrysotile asbestos. The performance of these measurements at an industrial site was found to be feasible and practical. A relatively large amount of Fe304 was seen in the lungs of those with welding experience, which masked the Fe304 contributed by asbestos, therefore this group was considered separately For the remainder (non-welders),the amount of Fe304 was plotted against a total dust exposure index which was available for each individual. The correlation between these quantities was not high, but was statistically significant at the 0.01 level. For the non-smokers within that group, the correlation was higher and the amount of Fe304 was relatively greater. These results suggest that the magnetic measurement of a chrysotile miner and miller reflects, at least to some extent, the amount of asbestos in his lung; the scatter could be due to individual differences in deposition and clearance, to which this measurement should be sensitive. These results are also consistent with the possibility that less dust is deposited or retained in smokers than in non-smokers. (Author abstract)

15. EPIDEMIOLOGY OF ASBESTOS-RELATED TUMORS.

Newhouse M
London Sch. Tropical Medicine and Hygiene, Keppel St. (Gower St.), London WC1 E7HT, England
Semin Oncol; 8(3):250-257 1981

Tumors shown to be related to the exposure of various asbestos dusts include mesothelioma of the pleura and peritoneum, a rare tumor in the general population but an important cause of death in particular asbestos workers; bronchogenic carcinoma; and possibly gastrointestinal tumors and cancer of the larynx. A case control study of patients dying of mesothelioma at The London Hospital since 1916 revealed that in addition to occupational exposure, domestic contact with dust was also important in the pathogenesis of mesothelioma. It was shown that increasing severity of exposure and increasing length of exposure were associated with an increased death rate from mesothelioma. Factors influencing the incidence of mesothelioma are the concentration of dust to which the workers were exposed, the length of time exposed, and the predominant type of asbestos fibers used. A synergistic effect of cigarette smoking and asbestos exposure on lung cancer has particularly important implications for asbestos workers. A strong anticancer antismoking campaign and careful screening of asbestos workers for lung cancer and mesothelioma are advocated. Other asbestos-related tumors, gastrointestinal cancers and cancer of the larynx warrant further investigation to define the relative risk and to determine what, if any, other cocarcinogenic factors may be involved. (37 Refs)

16. COMMUNITY ASBESTOS EXPOSURE IN GLOBE, ARIZONA.

Ing R, Falk H, Lemen RA, Carson G, Kelter A, Sarn J, Gray M
Chronic Diseases Div., Center for Environmental Health, Centers for Disease Control, 1600 Clifton Rd., Atlanta, GA, 30333
J Pediatr; 99(3):409-411 1981

A small community is described in which the residents, including young children, have been unknowingly exposed to asbestos (AB) for several yr. The long-term problems associated with the proper disposal of hazardous waste materials is highlighted. The 38-home subdivision, with a population of 118, located 2 miles from the town of Globe, had been constructed in 1973 on the property of an AB mill. In 1979, the homesites were accidentally discovered to be contaminated with AB. AB contamination in and around the homes was confirmed by the Arizona Division of Occupational Safety and Health and by the National Institute for Occupational Safety and Health. Tailings found around the subdivision as well as tailings from the active mill contained approx 60% chrysotile AB. AB fibers contaminated most of the homesites. Selected soil samples suspected of being contaminated contained at least 5% AB in 44/50 home lots; the soil contained over 50% AB in four samples. On January 11, 1980 evacuation of residents was recommended and temporary housing was soon arranged. The residents were identified for further follow-up. The implications of this episode are discussed. (13 Refs)

17. MESOTHELIOMA: AN OCCUPATIONAL DISEASE?.

Kjuus H, Langard S, Dyb S
Yrkesmedisinsk avdeling, Telemark sentralsjukehus, 3900 Porsgrunn, Norway
Tidsskr Nor Laegeforen; 101(19-21):1119-1122 1981

Mesothelioma was diagnosed in six 33-77-yr-old men. The mesothelioma was localized to the pleura in five cases, and to the peritoneum in one. Th initial symptoms included dyspepsia, wt loss. pleural exudate, chest pains, and pneumonia. The mesothelioma was diagnosed by open pleural biopsy in three cases, by open pleural biopsy and thoracoscopy in one, by exploratory laparotomy in one, and at autopsy in one. Definite or probable occupational exposure to asbestos was established in all cases. The interval between the beginning of asbestos exposure and diagnosis was 16 yr in one case, 34-58 yr in five. Four patients died 1-24 yr after the onset of the first symptoms. Two patients were alive 21 and 52 yr from the onset of the first symptoms, respectively. (28 Refs) (In NOR)

18. MORTALITY STUDY OF FIBROUS GLASS PRODUCTION WORKERS.

Morgan RW, Kaplan SD, Bratsberg JA
Environmental Health Associates, 2150 Shattuck Ave., Berkeley, CA, 94704
Arch Environ Health; 36(4):179-183 1981

This retrospective cohort study examines the mortality experience of 6,536 male employees engaged in fibrous glass production for 10 or more yr. A special component of this investigation was an analysis of a long-term cohort involving 1,222 individuals who were employed 20 or more yr and who experienced 30 or more yr latency. There was no marked excess of statistically significant increase in mortality for any cause of death. In fact, the pattern of mortality for fibrous glass production workers appeared considerably lower than comparable U.S. patterns, perhaps reflecting both a 'healthy worker' effect, and the life style of the steadily employed person. Long-term workers' mortality experience was similar to those individuals employed for shorter periods. (Author abstract) (5 Refs)

19. MORTALITY OF NICKEL WORKERS: EXPERIENCE OF MEN WORKING WITH METALLIC NICKEL.

Cox JE, Doll R, Scott WA, Smith S
Henry Wiggin and Co. Ltd., Hereford, England
Br J Ind Med; 38(3):235-239 1981

The mortality of men employed in a plant manufacturing nickel alloys from metallic nickel and other metals has been examined. The plant has operated since May 1953, and 1,925 men were identified who had been employed in the operating areas at the plant, other than as members of the staff, for a total of 5 or more yr, excluding breaks. Analysis of samples of air obtained from personal samplers showed that since 1975 most of

the men are likely to have been exposed to av concentrations of nickel of betwee n 0.5 and 0.9 mg Ni/m3. All but 22 (1.1%) of the men were successfully traced to 1 April 1978 or until they died or emigrated. One hundred and seventeen had died. The numbers of deaths observed from cancers of respiratory and other sites, other respiratory disease, ischemic heart disease, and other causes of death were compared with the numbers expected from national and local mortality rates. No evidence of the existence of any occupational hazard was obtained. The number of deaths from lung cancer (15) in men employed for 5 yr or more is small. At 98% of the number expected at local rates it is statistically compatible with risks of between 0.5 and 2.2x 'normal.' (Author abstract) (5 Refs)

20. A CASE-CONTROL STUDY OF BLADDER CANCER IN THE UNITED STATES RUBBER AND TYRE INDUSTRY.

Checkowway H, Smith AH, McMichael AJ, Jones FS, Monson RR, Tyroler HA
Occupational Health Studies Group, Sch. Public Health, Univ. North Carolina, Chapel Hill, NC, 27514
Br J Ind Med; 38(3):240-246 1981

A case-control study of bladder cancer was conducted in five United States rubber and tire companies to determine if there were high-risk jobs and work areas within the industry. The study included 220 male cases of bladder cancer, of whom 107 were identified from hospital record reviews and 113 from death certificates. Each case was matched individually with two industry controls by sex, race, yr of birth, and company. One control was matched additionally by yr of hire and duration of employment. Comparisons of cases and controls not matched by yr of hire and age of hire showed no differences for those variables, which suggests that age and calendar period of first exposure to the industry were not risk determinants. When the work histories of both cases and controls were contrasted it was found that cases were more likely than controls to have worked in milling (odds ratio (OR) = 1.91) and calender operation (OR = 2.21) jobs. The relative risk estimates for milling and calender operation both exhibited linear trends of increase with duration of exposure. Milling and calender operation jobs entail potential exposures to volatilized reaction products from heated rubber stock. A better understanding of etiological associations with job type will require more detailed characterization of the work environment with regard to the sources and levels of aromatic amines and other suspected bladder carcinogens. (Author abstract) (25 Refs)

21. MORTALITY OF UNITED KINGDOM ACRYLONITRILE POLYMERISATION WORKERS.

Werner JB, Carter JT
Health and Safety Executive, London W2 4TF, England
Br J Ind Med; 38(3):247-253 1981

The mortality of 1,111 men who worked on the polymerization of acrylonitrile and the spinning of acrylic fiber from 1950 to 1968 was surveyed up to the end of 1978. Seventy-nine deaths were identified. The population was drawn from six factories, where polymerization started before 1968, in England, Wales, Scotland, and Northern Ireland. In the group of men exposed to acrylonitrile for at least 1 yr the total number of deaths was smaller than expected. An excess of deaths from all cancers was found, arising mainly from cancers of the lung, stomach, colon, and brain, but the excess was not statistically significant. Significant excesses of stomach cancer overall and in those aged 55-64, and of lung cancer in those aged 15-44 were found. Consideration of deaths according to factory indicated that the excesses of stomach cancer may have been due to regional factors. The excess of lung cancer was investigated further in view of the fact that, unusually, it occurred in relatively young men, but no consistent difference between the duration of exposure to acrylonitrile of the three young patients with lung cancer and matched controls was found. The study is limited and further analysis in the future is needed. The results are not conclusive and neither add to nor detract from existing suspicions that acrylonitrile is a human carcinogen but, taken together with evidence from other studies, indicate the necessity for the continuing surveillance of the exposed population in the United Kingdom. (Author abstract) (9 Refs)

22. CHROMOSOMAL ANALYSIS IN VINYL CHLORIDE EXPOSED WORKERS: COMPARISON OF THE STANDARD TECHNIQUE WITH THE SISTER-CHROMATID EXCHANGE TECHNIQUE.

Anderson D, Richardson CR, Purchase IF, Evans HJ, O'Riordan ML
Central Toxicology Lab., Imperial Chemical Industries, Ltd., Alderley Park, Macclesfield, Cheshire SK10 4TJ, England
Mutat Res; 83(1):137-144 1981

Twenty-one workers exposed to vinyl chloride (VC) and six controls were subjected to conventional chromosomal analysis (CA) and the determination of sister-chromatid exchanges (SCE). In addition, SCE in human lymphocytes were studied before and after exposure to gaseous VC in vitro. These workers had been subjected to studies 18 mo before. In the exposed workers the av of the different types of abnormalities were significantly increased with CA, while only a slight, nonsignificant, increase of SCE was noted in the exposed group compared with the controls. In lymphocyte cultures exposed to VC during G0/early G1, and late G1/early S phase, no increase in SCE was noted without metabolic activation; a marked decrease was noted with activation and this was independent of cell cycle phase. The small increases of SCE in workers were attributed to low exposures rather than the inability of VC to induce SCE in human lymphocytes; the SCE levels could have returned to normal relatively quickly after exposure. It is suggested that SCE analysis might not be of much value after very low chronic chemical exposures, but might be useful during high chronic chemical exposures and during the first few days after acute exposure. (19 Refs)

23. CHROMOSOME ANALYSES OF NURSES HANDLING CYTOSTATIC AGENTS.

Waksvik H, Klepp O, Brogger A
Norsk Hydro's Inst. Cancer Res., Montebello, Oslo 3, Norway
Cancer Treat Rep; 65(7/8):607-610 1981

A cytogenetic study of 10 nurses handling cytostatic agents (av exposure, 2,150 hr) and 10 female hospital clerks revealed an increased frequency of chromosome gaps and a slight increase in sister chromatid exchange frequency among the nurses. The increase may be due to exposure to cytostatic drugs and points to these agents as a possible occupational health hazard. A second group of 11 nurses handling cytostatic agents for a shorter period of time (av exposure, 1,078 hr), and three other groups (8 nurses engaged in therapeutic and diagnostic radiology, 9 nurses engaged in anesthesiology, and 7 nurses in a postoperative ward) did not differ from the office personnel, except for an increased frequency of chromosome gaps in the radiology group. (Author abstract) (27 Refs)

24. STUDY OF IMMUNE RESPONSE IN WORKERS EXPOSED TO DIRECT DYES.

Korosteleva TA, Belokhvostova AT, Movsesjan KS, Kuznrtsov SI
N. N. Petrov Res. Inst. Oncology, USSR Ministry Health, Leningrad, USSR
Vopr Onkol; 27(7):47-51 1981

This study of textile workers exposed to direct dyes established a relationship between the duration and degree of exposure and the blood serum level of carcinogen-protein complexes (3-hydroxyanthranilic acid and benzidine) and immune response. (Author abstract) (11 Refs) (In RUS)

OCCUPATIONAL FACTORS: GENERAL

25. CANCER AMONG NAVY PERSONNEL: OCCUPATIONAL COMPARISONS.

Hoiberg A
Naval Health Res. Center, San Diego, CA, 92138
Milit Med; 146(8):556-561 1981

A large percentage of human neoplasms are believed to be caused by environmental factors, and increasing evidence suggests that certain occupations are higher risk for cancer than others. The purpose of this exploratory study was to determine cancer incidence and mortality among Navy occupational groups, and to identify those groups with an elevated risk of specific types of cancer. Hospitalization records of all active duty Navy enlisted men admitted for malignant or unspecified neoplasms during the period July 1965 to December 1976 were used for the analyses. Among the 12 enlisted occupational groups, Construction/Manufacturing personnel had the highest malignancy rate (72 per 100,000 per annum)-almost double that of men in technical specialties such as Electronics, Communications, and Electrical groups with approx 38 per 100,000. Deck, Aviation, Engineering/Hull, and Hospital Corpsman specialties had higher rates of malignant neoplasms than other groups of comparable ages. The present preliminary results support the need for detailed longitudinal studies of occupational factors and cancer incidence in the naval population in order to identify causal environmental and occupational influences. (Author abstract) (15 Refs)

26. CANCER INCIDENCE AND MORTALITY IN RELATION TO OCCUPATION IN 700,000 MEMBERS OF THE CANADIAN LABOUR FORCE.

Howe GR, Lindsay J, Miller AB
N.C.I.C. Epidemiology Unit, Univ. Toronto, Ontario M5S 1A8, Canada
Cancer Detect Prev; 3(2):487-497 1981

The mortality and cancer incidence experience of a 10% sample of the Canadian labor force has been monitored by using computerized record linkage to the Canadian National Mortality and Cancer Incidence Data Bases. Occupation and industry data are available for the sample for the yr 1965-1971, and the data are being used both to generate and test hypotheses concerning occupational exposures and increased risk of various cancers. It is planned to continue the monitoring process in future yr, and as the number of cancer cases and deaths in the cohort accumulate, the data will provide an increasingly valuable utility for cancer researchers. (Author abstract) (2 Refs)

27. INDUSTRIAL CARCINOGENESIS.

Vickers CF
Dept. Dermatology, Univ. Liverpool, Liverpool L69 3BX, England
Br J Dermatol; 105(Suppl21):57-61 1981

The occurrence of carcinogens in the workplace, particularly as they relate to skin cancers, is reviewed. Such carcinogens include coal, tar, paraffin oil, lubricating oil, pitch, and creosote. Arsenic contamination in the air and water results from metallurgical processe. Arsenic also occurs in dyes, fruit-sprays, glass, and various other materials. X-rays, UV, and other electromagnetic radiation are carcinogenic. Single incidents of trauma can be accepted on a legal basis as carcinogenic, although they are more likely co-carcinogenic. Cutaneous carcinomas seem to require the interaction of a carcinogen and a co-carcinogen, such as UV or trauma, more than do organ-specific carcinomas. The applications of the British system of compensation in cases of exposure to carcinogens is discussed. (14 Refs)

EPIDEMIOLOGICAL FINDINGS INVOLVING SPECIFIC AREAS

28. EPIDEMIOLOGY OF GASTROINTESTINAL CANCER.

Miller AB
NCIC Epidemiology Unit, Univ. Toronto, McMurrich Building, Toronto, Ontario M5S 1A8, Canada
Compr Ther; 7(8):53-58 1981

An epidemiological study is presented which attempts to quantify the problems and obtain clues as to the cause of gastrointestinal (GI) cancers in North America and elsewhere. Cumulative incidence to age 75 for various cancers of the GI tract as determined by the Third National Cancer Survey is presented. The range of incidence throughout the world of esophageal and liver cancer is greatest, followed by gallbladder, colon, stomach, rectal, and pancreatic cancer. The sex ratios are similar in incidence for colon cancer, moderately excessive for males with stomach, rectum, and pancreatic cancers, and substantially excessive for males with esophageal and liver cancers. An excess in females occurs with gallbladder cancer. Similarities in the frequency of occurrence for different diseases suggest common causes: the causes of esophageal cancer in men and women are probably different, while those for colon, rectal, and pancreatic cancers in both sexes may be similar, as are those for liver and esophageal cancer in men and for breast, endometrial, and ovarian cancer in women. The inverse correlation of colon cancer with stomach cancer suggests that entirely different causes may be involved. The epidemiologic knowledge of esophageal. stomach, colon and rectal, gallbladder, liver, and pancreatic cancers is reviewed. It appears that protective factors for one cancer are different from factors that appear to be carcinogenic for others. Future studies will identify interactions among factors and will specify which are responsible in different areas. (15 Refs)

29. EPIDEMIOLOGIC PATTERNS OF NASAL CANCER IN NEW YORK STATE.

Ulitsky GT, Shalat SL, Riccardi K, Vianna NJ
New York State Dept. Health, Bureau Environmental Epidemiology and Occupational HEalth, Albany, NY, 12237
JOM; 23(9):632-634 1981

A descriptive epidemiologic study of deaths due to nasal cancer in New York State from 1949 through 1978 was conducted. A statistically significant decrease in overall mortality rate was observed during this period and the rate of decline for males was 3x greater than that for females. One possible explanation for the authors' findings is that over a period of time there was a gradual improvement in industrial hygiene. (Author abstract) (12 Refs)

30. EPIDEMIOLOGY OF GASTRIC CANCER IN CHILE.

Armijo R, Detels R, Coulson AH, Medina E, Orellana M, Gonzalez A
Div. of Epidemiology School of Public Health, Univ. of California, Los Angeles, CA, 90024
Rev Med Chil; 109(6):551-556 1981

Japan has the highest gastric cancer mortality (GCM), followed closely by Chile and Costa Rica. The GCM in Chile was studied in 1957-1975 period. The extreme south and north had the lowest values for GCM were 20/100,000, which increases as approaching the center. The highest values for GCM were 50/100,000, found in 3 agricultural provinces 200 kilometers south of Santiago. The GCM decreased slightly worldwide between 1957 and 1972, this is true for Chile, except for the high risk areas. Chile has vast reserves of natural nitrates and they are used widely as fertilizers. Gastric cancer patients in controlled, matched studies were shown to have been residents longer in the areas of high nitrates utilization. Nitrates and nitrites were measured in saliva and urine of urban children, and edible vegetables of different areas, bu t no significant differences could be found. All factors, which could influence the results are analyzed and discussed. (10 Refs) (In SPA)

31. THE GASTRIC CANCER IN CHIRIQUI - FREQUENCY AND SOME EPIDEMIOLOGIC DATA.

Arosema A L
Panama
Rev Med Caja Seguro Soc; 13(1):160-165 1981

Panama is situated between Colombia and Costa Rica both countries with high incidence of gastric cancer. Panama's province of Chiriqui (C) is bordering on Costa Rica. The gastric cancer rate for C was 3.49/100000, this was the av for the three yr studied (1975-1977). The reported values for Costa Rica were 34/100000 for women and 64/100000 for men, which are similar to those found in Chile and not too far behind Japan with the highest values in the world. The frequency and the epidemiologic data for C coincide with other countries except for the blood group, which was predominantly O. Matson and Swamson reported that A and B blood groups probably belonged to European descendents and the O blood was predominant in the American native population, which constitute the majority in the C province. The areas of high frequency of gastric cancer in Colombia and Costa Rica are mostly settled by European descendents. The low frequency of gastric cancer in C when compared with high values found in neighboring Costa Rica are unexpected. The environmental factors, which are suspected to influence the high rate of gastric cancer, are found in C like: high mineral content of some areas especially copper, the volcanic zone and high consumption of smoked meats. The suspected protective environmental factors are also present: low altitude, adequate consumption of milk, fresh fruit and vegetables, better conservation of food by refrigeration and the predominant O blood group of the native population. (10 Refs) (In SPA)

32. NASAL CANCER IN ENGLAND AND WALES: AN OCCUPATIONAL SURVEY.

Acheson ED, Cowdell RH, Rang EH
Environmental Epidemiology Unit, Southampton General Hosp., South Academic Block, Southampton SO9 4XY, England
Br J Ind Med; 38(3):218-224 1981

A national survey of the incidence of nasal cancer in England and Wales during the period 1963-7 with special reference to occupation confirmed the well-known increases in incidence of nasal cancer in cabinet makers and wood machinists, together with the absence of any significant increase in carpenters and joiners, and the increases in boot and shoe operatives and repairers, and in nickel smelters in South Wales. The significant excesses of cases found among coalminers, furnacemen in the gas, coke, and chemical industry, and furnacemen and laborers in foundries may be associated with exposure to coal and coke dust or may be spurious. No excess of nasal cancer was found among male textile workers. Excesses of uncertain significance were found among tailors and dressmakers, bakers and pastry cooks, and printers. Apart from the well-known relationships between adenocarcinoma and work in the furniture and footwear industries there is no definite indication in this survey of any association between a particular histological type of nasal tumor and occupation in England and Wales. (Author abstract) (19 Refs)

33. AN EPIDEMIOLOGICAL SURVEY OF EIGHT OIL REFINERIES IN BRITAIN.

Rashton L, Alderson MR
Div. Epidemiology, Inst. Cancer Res., Sutton, Surrey SM2 5PX, England
Br J Ind Med; 38(3):225-234 1981

A mortality study of workers employed for at least 1 yr between 1 January 1950 and 31 December 1975 at eight oil refineries in Britain has been carried out. Over 99% of the population were successfully traced to determine their vital status at 31 December 1975. The mortality observed in the study population was compared with that which would be expected from the mortality rates for the all male population of England and Wales, and Scotland, with adjustment for regional variation in mortality for the English and Welsh refineries. The overall mortality observed was considerably lower than that expected on this basis, as was the mortality from heart disease, stroke, bronchitis, and pneumonia. The observed number of deaths from all neoplasms was also very much less than expected, a result almost entirely due to a large deficit of observed deaths from lung cancer. Raised mortality patterns were found in several refineries for cancers of the esophagus, stomach, intestines, and rectum, although no location was consistently high for all these causes of death. Different yr-of-entry cohorts and job groups were also affected. In general, mortality from these causes increased as length of service and interval from starting work increased. There were also significantly more observed deaths than expected from cancer of the nasal cavities and sinus, and melanoma. Further work is required to ascertain whether these are due to an occupational factor and, if so, to identify the physical or chemical nature of the risk. (Author abstract) (32 Refs)

34. DEVELOPMENT OF CANCER INCIDENCE DURING THE PERIOD 1943-1976. CANCER STATISTICS. PART 2.

Jensen OM
Cancerregisteret, Copenhagen, Denmark
Ugeskr Laeger; 143(27):1729-1732 1981

Cancer morbidity and mortality statistics for the period 1943-1976 in Denmark are presented. While there were approx 3,800 new cases of cancer among men and approx 5,000 new cases among women in the 1940s, the number of new cases per yr was approx 9,100 for each sex separately 30 yr later. After correction for age, the cancer incidence has increased by approx 46% in men and by approx. 11% in women, corresponding to an av annual increase by 1.5% in men and 0.2% in women. The increase in the incidence rates showed no differences between rural and urban areas. In men, cancer linked with smoking accounted for about two thirds of the increase in cancer mortality. The ratio of cancer incidence to cancer mortality has increased from 1.27 during the period 1943-1947 to 1.47 during the period 1973-1976 in men and from 1.33 to 1.61 during the corresponding periods in women. Despite the increase in the cancer incidence, there was a stagnation or even a decrease in the cancer mortality in both sexes after 1965. (11 Refs) (In DAN)

35. ENVIRONMENTAL POLLUTION AND CHRONIC DISEASE. LUNG CANCER IN STRANDBY.

Bach E, Steensberg J
Dansk Institut for Klinisk epidemiologi, Svanemollevej 25, DK-2100 Copenhagen, Denmark
Ugeskr Laeger; 143(31):1979-1982 1981

Eleven cases of lung were diagnosed in men (all smokers) since 1968 in Strandby, a small coastal town in Denmark with an asphalt plant as the only industry. The yearly incidence was 2/1,000 population for the entire town and 12/1,000 for that part of the town in which the cases were clustered. The comparison of the mortality data for the entire small town with those for Denmark for the period 1940-1980 showed a parallel evolution and no statistically significant difference from the overall lung cancer mortality in Denmark. The findings indicate the great importance of the selection of the population size to which the lung cancer cases are related. (8 Refs) (In DAN)

36. INCREASING FREQUENCY OF PRIMARY LIVER CARCINOMA IN THE CANTON OF ZURICH.

Maurer R, Schuler G, Bosch R, Ruttner J
Institut fur Pathologie, Universitatspital, 8091 Zurich, Switzerland
Praxis; 70(27):1222-1227 1981

The occurrence of liver cirrhosis (LC) and primary liver carcinoma (PLC) was studied in 39,336 consecutive autopsies performed in the Canton of Zurich during the period 1967-1978. The autopsies represented 34% of all deaths during the observation period. PLC was found in 405 cases (313 men and 92 women), LC in 2,368 cases (1,605 men and 763 women). PLC was associated with LC in 299 cases (252 men and 47 women). The proportion of PLC increased during the observation period from 0.68% in 1967 to 1.51% in 1978, while the proportion of LC remained fairly constant at approx 6%. There was an increase in the proportion of PLC both with and without LC. The age and sex distribution of PLC shows a predilection for men aged 50-79 yr. There was a 50% increase in the occurrence of PLC among men in their 60s and 70s, while cirrhosis remained constant in men in their 60s and 70s, while cirrhosis remained constant in men of this age group. It is concluded that there has been a real increase in the incidence of PLC, which can not be explained by the higher proportion of old people in the population, nor by an increased frequency of LC. This assumption is also supported by increased frequency of LC. This assumption is also supported by increased mortality due to PLC in th e Swiss federal mortality statistics. Aflatoxins are unlikely to have been a significant etiological factor. (22 Refs) (In GER)

37. EPIDEMIOLOGY OF CANCER.

Pawlega J
Pracownia Epidemiologii, Oddzial Instytutu Onkologii w Krakowie, ul. Garncarska 11, 31-115 Krakow, Poland
Przegl Lek; 38(5):447-451 1981

Cancer epidemiological data are presented for Krakow (urban area) and a nearby rural area for the period from 1965 on the basis of Cancer Registry data. The overall standardized cancer morbidity (per 100,000 population) in men in Krakow was 285 (70.9 for lung cancer, 35.1 for gastric cancer, 22.9 for skin cancer, 12.3 for pancreatic cancer, and 11.0% for urinary bladder cancer). The overall cancer mortality for men in the rural area was 177.1 (38.9 for lung cancer, 33.1 for gastric cancer, 9.6 for kin cancer, 8.3 for prostate cancer, and 8.0 for urinary bladder cancer). The cancer morbidity for women in Krakow was 201.1 (37.7 for breast cancer, 22.0 for cancer of the uterine cervix, 14.8 for gastric cancer, 14.9 for skin cancer, and 12.7 for lung cancer). The corresponding figures for the rural women were 122.1 (overall morbidity); 17.2 for gastric cancer, 17.8 for breast cancer. The percentage of cases diagnosed histologically was higher among the urban than among the rural patients, and the percentage of the patients not receiving antitumor therapy was higher among the latter. The relative 5-yr survival rates in men were higher among the urban patients than among the rural ones for all major localizations (lips, stomach, rectum, larynx, lungs, prostate, and bladder) except skin cancer, and the relative 5-yr survival of the urban women was higher for all major localizations (cancer of the stomach, skin, breasts, uterine cervix, endometrium, ovaries, and leukemia). (16 Refs) (In POL)

38. GEOGRAPHICAL VARIATIONS IN CANCER INCIDENCE IN TWO URBAN POPULATIONS IN INDIA.

Jussawalla DJ, Yeole BB, Natekar MV, Rajagopalan TR
Bombay Cancer Registry, Indian Cancer Society, Parel, Bombay 400 012, India
Indian J Cancer; 18(2):91-98 1981

The variation in cancer incidence between the populations of Greater Bombay and Poona City was investigated by age, sex, and site. Both age adjusted and truncated rates are reported and a simplified statistical method was used for testing the variations. Between 1972 and 1974, there were 12,969 new cancer cases in Bombay and 2,570 new cases in Poona City. The sex distribution showed many more males than females in Bombay (7,428 vs 5,541) than in Poona City (1,346 vs 1,324). In both areas cancer incidence increased sharply with age. In Bombay, more cancers of the tongue, pharynx, esophagus, and lung were seen, while in Poona City, more cancers of the stomach, buccal mucosa, rectum, and penis in males, and stomach, breast, uterus and cervix in females were seen. These differences are attributed to differences in the environmental, geographical and demographic status of these two cities. (10 Refs)

39. STATISTICAL ANALYSIS OF IMMUNOLOGIC, CLINICAL AND HISTOPATHOLOGIC DATA ON LYMPHOID MALIGNANCIES IN JAPAN.

The T and B-Cell Malignancy Study Group
(c/o K. Tajima) Div. Epidemiology, Aichi Cancer Center Res. Inst., 81-1159 Kanokoden, Tashiro-cho, Chikusaku, Nagoya, Japan
Jpn J Clin Oncol; 11(1):15-37 1981

The geographical and clinicopathological features of 673 cases of lymphoid malignancies collected from 27 institutions between June and August 1980 are described with special reference to T-cell malignant lymphoma/leukemia in an attempt to confirm the previously reported characteristics of the 'endemic T-cell leukemia/lymphoma in Japan' and to provide basic information for further investigation to elucidate the etiology of this disease. T-cell malignancy accounted for 48.9% of the group, B-cell type for 24.1%, other types for 17.1%, and non-T acute lymphocytic leukemia for 5.2%. According to the Lymphoma Study Group Classification, 5.8% were follicular lymphomas while the remaining 94.2% were diffuse lymphomas. Clinical features described included initial clinical manifestations, family history, results of laboratory studies, complications, and the clinical diagnosis. The sex ratios and age distributions of patients are discussed. Survival data are presented. It was found that prognosis varied according to cell type. Patient occupation and geographic distribution of the lymphomas were also considered. (26 Refs)

40. CANCER STATISTICS OF CHINESE VERSUS AMERICANS.

Lee YT
Dept. Surgery, Univ. Southern California Sch. Medicine, Los Angeles, CA, 90033
J Surg Oncol; 17(4):355-366 1981

Cancer incidence and mortality rates of Chinese in China (Shanghai, Kwangtung), Hong Kong, and the United States (San Francisco, etc) are presented. The rates for the U.S. white population are included for comparison. Additional mortality rates of Chinese in Japan and incidence rates of Chinese in Singapore and British Columbia are also available. Such statistics emphasize both the distinctions and the similarities in cancer problems among Chinese living abroad and Chinese living in China. Some ethnic and cultural differences, as well as differences in age, site distribution, and histological subtype, of certain cancers are discussed. (Author abstract) (27 Refs)

41. CANCER MORTALITY IN CHINA, 1975-2000: IMPLICATIONS FOR CANCER CONTROL.

Li FP
Clinical Epidemiology Branch, NCI, Bethesda, MD
Cancer Detect Prev; 3(2):499-506 1981

A recent nationwide cancer survey provided data for an analysis of future cancer mortality in the People's Republic of China. Aging of the population is projected to increase annual cance r mortality from 691,000 deaths in 1975 to 1,169,000 in the yr 2000, a rise of 69%. Approx 20,000 more patients will die of cancer each yr during this period, placing substantial burdens on limited medical and economic resources in China. Carcinogenesis research and cancer prevention programs are examined as appropriate strategies for cancer control in this populous nation. (Author abstract) (13 Refs)

OTHER EPIDEMIOLOGICAL FINDINGS

42. EPIDEMIOLOGICAL ASPECTS OF ESOPHAGEAL CANCER.

Ruggieri M, Tosato F, De Rocco K, Lepore M, Cipriano E, Paolini A
IV Cattedra di Clinica Chirurgica Generale e Terapia Chirurgica, Universita degli Studi di Roma, Rome, Italy
Recenti Prog Med; 70(5):545-556 1981

The epidemiology of esophageal cancer (EC) is reviewed and epidemiological data are presented for a series of patients subjected to surgery for EC at a clinic during the period 1971-1980. The factors probably favorable for the development of EC are ethyl alcohol, tobacco, polycyclic aromatic hydrocarbons (benzopyrene, dibenzanthracene, and 3-methylcholanthrene) present in smoked foods, nitrosamines, molybdenum, tannin, hot food, diet deficient especially in thiamine, riboflavine, and vitamin C, esophageal stenosis, peptic reflux esophagitis, brachyesophagus, achalasia of the cardia, gastric resection, and Plummer-Vinson syndrome. The epidemiological analysis of the patients treated during the 1971-1980 period showed that all patients were in the age bracket 42-75 with a mean of 59.3 yr, and that women accounted for 5.2% of the patients only. Alcohol consumption (1 liter/day) was established in 18.5% of the patients, alcohol consumption and smoking (10 or more cigarettes/day) in 52.5%, smoking only in 18.5%, and neither smoking nor alcohol consumption in 10.5%. The cervical third of the esophagus was affected in 10.5% of all cases, the thoracic third in 34%, and the abdominal third in 55.5%. (28 Refs) (In ITA)

43. THE EPIDEMIOLOGY AND PATHOGENESIS OF THE MAMMARY CANCER.

Pimentel E
Catedra de Fisiopatologia, Universidad Central de Venezuela, Caracas, Venezuela
Rev Fac Med Univ Cent Venez; 1(1):27-47 1981

The mammary cancer is five to six times more frequent in the northern countries of Europe and in North America, then in Asia and Africa. The southern European countries and South America are in between. This is a general rule with notable exceptions. In 1978 in Venezuela the total cancer mortality was 13.5%. The mammary cancer was 9.6% of the total women cancer mortality and it was in the fourth place. In the United States the mammary cancer was in the first place with 13.6% of the total women cancer mortality. The pathogenic factors are endogenous (genetic, immunologic, hormonal, reproductive, neural) or exogenous (diet, ionizing irradiation, chemical carcinogens, oncologic viruses). The relative importance o f each factor is very variable from one species to another and there are notable differences between various stocks of the same species. The pathogenic factors of human mammary cancer are not well known. The genetic factors seem to be important in the minority of cases. The immunologic and hormonal factors probably are not involved in the transformation of the normal cells, but they influence the growth of neoplastic cells. There are no carcinogenic substances known, which play a role in the origin of the human mammary cancer. A minority of cases are related to ionizing irradiation. The possible role of virus is not yet elucidated. (63 Refs) (In SPA)

44. LIFESTYLE AND CANCER.

Higginson J
International Agency for Res. on Cancer, Lyon, France
Cancer Forum; 5(1):4-14 1981

The causation of cancer is discussed with respect to cancers caused by defined exogenous factors and those caused by probable environmental factors. The possible role of general environmental pollution in causing cancer is discussed. Lifestyle is defined as the overall cultural, behavioral, and dietary environments are well as clearly defined habits. The role of lifestyle in the etiology of cancer is discussed with respect to the significance of occupational studies and low risk groups. Clinical cancer should be considered in terms of a summation of events, only a few of which have been identified and studied. The implications of epidemiological observations in relation to the mechanisms of carcinogenesis are reviewed. Epidemiology since 1950 concerning the etiology of cancer is tabulated. Cancer is discussed as a socioeconomic problem. Future research should involve epidemiological studies in order to predict future trends, the differentiation between potential carcinogens which have only been recently discovered and stimuli present in the environment for a significant period, and research on lifestyle factors. (no Refs)

POTENTIAL CARCINOGENIC FACTORS RELATED TO MEDICAL TREATMENT

45. STUDIES ON THE ROLE OF ORAL CONTRACEPTIVE USE IN THE ETIOLOGY OF BENIGN AND MALIGNANT LIVER TUMORS.

Mettlin C, Natarajan N
Cancer Control and Epidemiology, Rosewell Park Memorial Inst., 666 Elm St., Buffalo, NY, 14263
J Surg Oncol; 18(1):73-85 1981

Studies involving the role of oral contraceptive use in the etiology of benign and malignant liver tumors are reviewed. The evidence from these studies strongly suggests that there is a relationship between the use of oral contraceptives and benign liver tumors. The actual risk appears related to duration of usage and may also be related to the type of contraceptive steroid used. Further investigation is required to determine the oncogenic potential of oral contraceptives and the malignant potential of benign tumors. (Author abstract) (62 Refs)

46. TRENDS IN THE INCIDENCE OF ENDOMETRIOID AND CLEAR CELL CANCERS OF THE OVARY IN T HE UNITED STATES.

Cramer DW, Devesa SS, Welch WR
Dept. Obstetrics and Gynecology, Brigham and Women's Hosp., Boston, MA, 02115
Am J Epidemiol; 114(2):201-208 1981

. An increase in the reported incidence of endometrioid and clear cell cancers of the ovary occurred in the United States during the 1970s, while no change occurred in the overall incidence of ovarian cancer. The authors cannot rule out that this was due to a shift in the criteria for histologic classification or improved coding, although there seem unlikely to account entirely for the change. In the four areas where the trend for endometrioid and clear cell cancers of the ovary was examined, the percent increases in their occurrence were correlated with the percent increases in the occurrence of carcinoma of the uterine corpus. The concomitant trends and the biologic similarities between these histologic types of ovarian cancer and the uterine cancers suggest that common etiologic factors may be involved. The role of postmenopausal estrogen use in the etiology of ovarian cancer must be clarified by further epidemiologic studies, but such studies should take tumor histology into consideration. (Author abstract) (18 Refs)

47. A CASE-CONTROL STUDY OF THE POSSIBLE ASSOCIATION BETWEEN ORAL CONTRACEPTIVES AND MALIGNANT MELANOMA.

Adam SA, Sheaves JK, Wright NH, Mosser G, Harris RW, Vessey MP
Dept. Community Medicine and General Practice, Univ. Oxford, Oxford, England
Br J Cancer; 44(1):45-50 1981

In a case-control study, we investigated 169 women aged 15-49 yr with malignant melanoma brought to the attention of the Oxford and South Western cancer registries during the yr 1971-76, together with 507 matched controls. Data about medical, reproductive, drug and smoking histories were obtained both by reviewing general practitioner (GP) records and from the women themselves by postal questionnaires. There was no significant evidence of any overall increase in the risk of melanoma in oral contraceptive (OC) users (data from GP records ever use vs never use, relative risk (RR) 1.34, 95% confidence limits 0.92-1.96; corresponding data from postal questionnaires - RR 1.13, limits 0.73-1.75). However, although not significant, the risk estimated from data in the postal questionnaires was higher in women who had used OCs for 5 yr or more (use greater than or equal to 5 yr vs never use, RR 1.57, limits 0.83-3.03). Previously demonstrated risk factors for melanoma, such as fair skin, blonde or red hair and Celtic origin were found to be commoner in the cases than in the controls. Data from the Oxford/Family Planning Association contraceptive study were also examined. Unexpectedly there was a strong suggestion of a negative association between OC use and melanoma risk, but the analysis was based on only 12 women with the disease. (Author abstract) (19 Refs)

48. IN UTERO EXPOSURE TO DES: WHAT HAVE WE LEARNED?

Noller KL
Dept. Obstetrics and Gynecology, Mayo Clinic, Rochester, MN, 55905
Mayo Clin Proc; 56(9):577-578 1981

The association between in utero exposure to diethylstilbestrol (DES) and the development of vaginal clear cell adenocarcinoma (CCA) in young women was first reported 10 yr ago. Subsequent studies indicated that cervical CCA was also related to DES but that these cancers occur only once in every several thousand exposed women. Benign abnormalities noted in DES exposed women included changes in the epithelium of the vagina and cervix and changes in the structure of the cervix and uterus. Because the epithelial changes (ie, metaplasia) mimic intraepithelial neoplasia, many women have been incorrectly diagnosed as having cervical dysplasia or carcinoma in situ. A large, multicenter DES project reported that these conditions occurred less frequently in the study cohort than in the unexposed controls. Infertility does not appear to be more frequent in DES-exposed women, but spontaneous abortion is slightly increased and premature delivery is increased. A pamphlet summarizing the documented effects of DES exposure has been prepared by the NCI. (10 Refs)

49. PROTECTIVE EFFECT OF ORAL CONTRACEPTIVES AGAINST CANCER OF THE REPRODUCTIVE ORGANS.

Johansson ED, Svanstrom L
Kvinnokliniken, Akademiska sjukhuset, Uppsala, Sweden
Lakartidningen; 78(28/29):2591-2592 1981

Studies on the protective effect of oral contraceptives, especially combined contraceptives, against cancer in the reproductive organs are reviewed. The combined oral contraceptives are more or less gestagen-dominated. They can therefore be expected to reduce the frequency of estrogen-dependent tumors. There is no clear evidence of a reduced incidence of breast cancer among women using such combined oral contraceptives: most studies show no change in the frequency of breast cancer, but one study showed reduced breast cancer risk in the age group 31-40 yr, and increased breast cancer risk in women who continued taking oral contraceptives beyond the age of 45 yr. Some studies showed a lower growth and later metastasized breast cancer in women who had used oral contraceptives compared with women who had not used contraceptives. The epidemiological studies show a marked reduction of the frequency of ovarian and endometrial cancer in women who had used oral contraceptives to half to one third of the frequency in women who had not used oral contraceptives. (12 Refs) (In SWE)

50. CHOLECYSTECTOMY AND CANCER OF THE LARGE BOWEL.

Turnbull PR, Smith AH, Isbister WH
(c/o Isbister) Dept. Surgery, Wellington Clinical Sch. Medicine, Wellington, New Zealand
Br J Surg; 68(8):551-553 1981

A matched case control study was conducted in order to determine the association between previous cholecystectomy and the development of large bowel cancer. One hundred and sixty men and 145 women presenting with large bowel cancer were studied. One control was selected for each case matched according to age, sex and date of admission. The medical records for each patient in the study were reviewed for evidence of previous cholecystectomy. No association was found among male patients, but for women an estimate of relative risk of 2.7 was obtained for patients who had had previous cholecystectomy. This association was largely a consequence of the fact that 10 female patients with rectal cancer had had a previous cholecystectomy compared with only 1 of their controls. It is possible that carcinogenic breakdown products of bile salts are most concentrated in the distal portion of the large bowel, but it is difficult to explain why the association should be confined to women only. (Author abstract) (24 Refs)

PUBLIC POLICY INVOLVING ENVIRONMENTAL AND OCCUPATIONAL CARCINOGENS

51. OCCUPATIONAL CANCER RISK MANAGEMENT IN SWEDEN.

Holmberg B
Unit Occupational Toxicology, Dept. Occupational Health, Natl. Board Occupational Safety and Health, S-17184 Solna, Sweden
Ann NY Acad Sci; 363:255-260 1981

Risk management comprises five elements: (1) identifying the kind of risk and defining an exposure to carcinogens, (2) quantification of the risk, (3) evaluation of the cancer risk, (4) deciding what level of risk is acceptable in the work place, and (5) controlling the risk. The regulatory acts in Sweden are the Work Environment Act and Ordinance, the Act on Products Hazardous to the Health, and the Environment Control Act. More specifically related to cancer is the Radiation Protection Act. Government authorities operate relatively independently according to jurisdiction. Six different agencies have authority over aspects of carcinogen control. The National Board of Occupational Safety and Health regulates hazards in the work place. Its governing board include civil servants, members of parliament, employers, and employees. Three subordinate departments deal with supervisory or enforcement, research, and administrative functions. Regulatory decisions are made using a 'risk triangle' consisting of scientists, workers and employers, and civil servants. Open debate is encouraged. Actual decisions are made by the board itself. Elements in the control of carcinogens include constant monitoring, publishing lists of hazardous substances, and promoting the use of less harmful substances when possible. (21 Refs)

52. A FRAMEWORK FOR UNREASONABLE RISK IN THE TOXIC SUBSTANCES CONTROL ACT (TSCA).

Page T
Environmental Quality Lab., California Inst. Technology, Pasadena, CA
Ann NY Acad Sci; 363:145-166 1981

According to the Toxic Substances Control Act, the finding that a substance pres ents an unreasonable risk leads to precautionary regulations, whereas the finding that a substance may present an unreasonable risk leds to testing. This paper develops a framework that permits systematic consideration of the cost of testing and the value of new information from testing. The ingredients of the framework are baseline or existing information, the characteristics of the test or test combinations, and the valuation of the costs and benefits of various control options. The approach strikes a balance between the risk of taking precautionary action for a safe chemical and the risk of not controlling an unsafe chemical. The framework is illustrated by a study of the carcinogenic risk in drinking water, by a numerical example of cancer probability, and by an example of balancing the risk of a false negative against the risk of a false positive. (18 Refs)

53. THE EMERGING REGULATORY DILEMMA.

Barnard RC
Law Office of Cleary, Gottlieb, Steen and Hamilton, Washington, DC
Ann NY Acad Sci; 363:89-98 1981

After a review of the marked increase in substances known to be of some carcinogenic potential, it is suggested that regulatory agencies rethink their strategies, particularly the increasing use of generic regulations for control of carcinogens. The premise is examined that the legal and scientific assumptions that the substances regulated and the hazards they pose are equivalent and can be identified, evaluated and regulated all alike. After reviewing the many difficulties involved, it is recommended that government be candid and acknowledge that the vast and ncreasing array of carcinogenic signals calls for a new regulatory strategy. Greater emphasis should be placed on the role of science in the regulatory function, as indicated in the Report of the President's Office of Science and Technology Policy outlining a framework for regulating carcinogens. This report calls for the separation of the scientific functions from regulatory functions, and for the definition of the objec-

tive of the scientific evaluation as the determination of the most probable risk (with uncertainties identified) rather than worst case analysis with conservative assumptions and models biasing the result in some undisclosed way. This approach will get away from the forthcoming tyranny of lists. The development of a new national cancer policy will take effort but the direction will be distorted unless the best science is truly integrated into the regulatory process. (21 Refs)

54. THE USE OF COST-BENEFIT ANALYSIS IN REGULATORY DECISION MAKING.

Crandall RW
Brookings Inst., 1775 Massachusetts Ave. NW, Washington, DC, 20036
Ann NY Acad Sci; 363:99-107 1981

Over the past yr the wisdom of using cost-benefit analysis has changed very slowly. It is suggested that difficult decisions regarding human health and safety should be required to proc eed in a rational manner instead of defending important decisions with little more than the assertion that an economic value cannot be placed on human life. Discussions are presented on the form of regulation, the control problem, the role of uncertainty, the absence of alternatives to cost-benefit analysis, and the issue of equity. A practical program is outlined which could provide an agenda to which economists, public-interest lobbyists, regulator, and health scientists can all subscribe. First, the nature of the risk should be carefully measured and explained to the public. Thus, when a suspected carcinogen is regulated, the regulator should present the best evidence on the dose-response relationship, including the range of uncertainty surrounding the best estimate. Second, the identity of the population at risk should be carefully identified, and the uncertainty in identifying this population should be clearly spelled out. Finally, available cost information should be compiled and compared to the risk, which presents problems. One suggested solution would be to consider the incremental cost per expected reduction in deaths for categories of health risks with similar variance in estimates. By at least focusing attention upon this measure, the cause of rational decision-making can be advanced. (12 Refs)

55. CARCINOGENIC RISK MANAGEMENT IN THE UNITED STATES.

Selikoff IJ
Environmental Science Lab., Dept. Community Medicine, Mount Sinai Sch. Medicine, City Univ. New York, New York, NY, 10029
Ann NY Acad Sci; 363:283-293 1981

Carcinogenic risk management is in the developmental stage in the United States. Data from studies of smoking, asbestos, and vinyl chloride have shown the effect of carcinogen dose on the incidence and development of cancers. As a result, the yes-or-no approach to carcinogens has been replaced by regulation based on the dose-response approach. Observation and regulation of carcinogens is being extended from the workers who produce them to include anyone who is exposed during the life of the carcinogens. Other aspects under study include latency, absence of thresholds, dose-induction periods, and multiple factor interactions. The extrapolation of animal data to man remains a debated subject. Observations indicate that, with at least some carcinogens, risk is reduced in time if exposure to the carcinogen ceases. The relationship between mutagenicity and carcinogenicity is still uncertain. The reproductive effects of carcinogens and the decision to ban or control them present ethical and legal questions that remain unanswered. (15 Refs)

56. MANAGEMENT OF ASSESSED RISK FOR CARCINOGENS IN CANADA: THE INTERPLAY OF SOCIAL, POLITICAL, AND SCIENTIFIC FACTORS.

Atherley GR
Canadian Centre for Occupational Health and Safety, Canada
Ann NY Acad Sci; 363:261-267 1981

The evaluation and control of carcinogens in Canada is complicated by the political structure. Control is largely exercised by the provinces. Attempts to establish standards are frustrated by jurisdictional conflicts. Whether policy-making is more effective at the local or national level is uncertain. Uranium mining is cited as an example of existing problems. Miners subject to federal regulation have been exempted from stricter provincial regulations. Current trends in occupational health and safety are toward decentralization, placing greater responsibility on industry, workers, and local authority. Canadian regulations, like those of the west in general, depend on the Time Weighted Average for controlling exposure to hazardous substances. The Eastern bloc relies on the Maximum Allowable Concentration. Exclusive dependence on either standard is criticized as too inflexible. (6 Refs)

57. PERSPECTIVES IN THE MANAGEMENT OF CARCINOGENIC RISK IN NORWAY.

Norseth T
Inst. Occupational Health, Gydas vei 8, Oslo 3, Norway
Ann NY Acad Sci; 363:247-253 1981

There is no current official policy on the management of carcinogenic risk in Norway. Major principles are expressed in the Product Control Act and the Working Environment Act. The Directorate of Labor Inspection publishes a list of acceptable limits for airborne contaminants, on which carcinogens are specifically identified, but no discussion is included. A classification system has been proposed, containing two classes. Class I includes carcinogens documented by epidemiology or by reproducible animal experiments. Class II includes carcinogens suspected on the basis of short-term tests only or animal tests of uncertain significance. The Advisory Committee for Work with Carcinogenic Substances has been mandated to (1) coordinate and give advice on all questions relating to work with carcinogens and prevention of occupational cancer, (2) initiate specific research into these matters, (3) advise research institutions and supporting financial agencies on priorities for the use of limited resources, (4) advise the mass media or publish results relevant to occupational cancer. The Cancer Registry provides for epidemiologic investigations, case reference studies, evaluation of geographical distribution of cancers, and linking of past and present workers in specific factories with cancer incidences. Registry data dates back to 1953. (4 Refs)

58. REGULATION OF CARCINOGENS IN FOOD.

Rodricks JV
Clement Associates, Washington, DC, 20007
Ann NY Acad Sci; 363:29-35 1981

Food chemicals include naturally occurring chemicals, food additives, and food contaminants. Easiest to eliminate are additives, followed by contaminants and naturally-occurring chemicals. The public perceives the risks associated with these food chemicals in different ways: additives are seen as most threatening, contaminants next, with little thought given to naturally-occurring chemicals. These three classes of food chemicals are also treated differently by law. Food additives must acquire premarket approval from the Food and Drug Administration.

Dangerous food contaminants must be shown by the government to be injurious to health before action can be taken. Present law allows the the striking of some balance between the benefits of human health protection and the costs of destroying food contaminated by a particular substance. Natural food components have been largely ignored by law. A health risk must first be demonstrated, then only in the event of a clear and obvious benefit to the public health can elimination of the food be considered. No methodology permits the absolute assurance of safety for a finite level of exposure to any substance displaying any form of toxicity. An operational definition of residue must be determined. A risk-based standard is proposed. Measurement of risks and determination of how much risk can be accepted are discussed. The question of 'acceptable' risk is addressed. (no Refs)

59. A COMPREHENSIVE OCCUPATIONAL CARCINOGEN POLICY AS A FRAMEWORK FOR REGULATORY ACTIVITY.

Ruttenberg R, Bingham E
Occupational Safety and Health Admin., Washington, DC
Ann NY Acad Sci; 363:13-20 1981

Some of the benefits expected from the generic cancer policy of the Occupational Safety and Health Administration (OSHA) are discussed, including benefits to workers, to management, and to government efficiency and effectiveness. The need for a generic cancer policy as a framework for regulatory activity is discussed. Some of the positive built-in aspects of the policy include positive incentives to industry for improving health conditions in the workplace. This policy establishes criteria and provides for the regular publication of lists of specific substances that are priorities for future OSHA-rule making. Risk assessment for carcinogens is discussed with respect to what is desirable and what is possible. Parameters for determining carcinogenic risk to humans are established from non-human data. Waiting for epidemiologic data is unacceptable, since it means waiting to count dead bodies. The overall goal should be workplaces free of carcinogenic risk altogether. Substances that cause cancer invariably cause other problems as well. A policy guideline report of the Interagency Regulatory Liaison Group considers various types of evidence of carcinogenicity and discusses current methodologies for quantification of risk. It acknowledges limitations in current risk estimation methodologies and tendencies to underestimate human risk. (4 Refs)

60. AN ALTERNATIVE TO RISK-BENEFIT ANALYSIS IN GOVERNMENT DECISION-MAKING ABOUT CHEMICAL CARCINOGENS.

Roderick H
Centre for Medical Res., Univ. Sussex, Brighton BN1 9RF, East Sussex, England
Ann NY Acad Sci; 363:233-245 1981

The risk of cancer due to exposure to carcinogens may be reduced by (1) reducing the amount of carcinogen in the environment, (2) requiring the substitution of safer substances when possible, (3) limiting the use of carcinogens to circuits not open to the environment, (4) providing incentives for recycling of hazardous substances, and (5) removing hazards from the environment. Risk-benefit analyses used in decision-making are complicated by problems with the availability of information used in analysis, methods of weighing costs against benefits, and political considerations. An alternate approach would require regulatory authorities to (1) single out carcinogens as different from other toxic substances and treat them as undesirable in commerce and unacceptable in the environment, and (2) discriminate against carcinogens in favor of less harmful substitutes, when possible. Success would require adequate information about carcinogens, sufficient time for economic and technological adjustment, adequate incentives and penalties, and continuous monitoring by the government. (23 Refs)

61. DEFICIENCIES OF SCIENCE AND POLICY IN GENERIC CANCER REGULATION BY THE OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION.

Hoerger FD, Condor JW
Health and Environmental Sciences Dept., Dow Chemical Co., Midland, MI, 48640
Ann NY Acad Sci; 363:21-27 1981

The carcinogen regulations newly promulgated by the Occupational Safety and Health Administration (OSHA) are discussed with particular attention to some of the major scientific shortcomings and some corrective efforts. The regulation is reviewed briefly. Major deficiencies discussed included the limited role of risk assessment, recognition of a dose-response relationship and differences in potency, the rigidity of the classification process, the unduly broad classification recipe, exclusion of negative human and animal data, exclusion of metabolic data, no recognition of the indirect mechanisms of carcinogenesis, the scientific panel allowed by the regulation is cosmetic, the avoidance of risk estimation, the rigidity of the new policy, problems associated with the listing of substances, and the discouragement of data development. To correct some of these deficiencies, the following suggestions are made: all relevant data must be considered early in the process before the publication of any carcinogen lists; the scientific evaluation of data must use the best scientific talent available, not just government employees; peer review is essential for scientific determinations relating to the existence and degree of carcinogenic risk; and the best carcinogenic risk judgements must be used by OSHA before societal decisions for regulation are made. (no Refs)

62. COST-BENEFIT ANALYSIS AND THE REGULATION OF ENVIRONMENTAL CARCINOGENS.

Harrison D
John F. Kennedy Sch. Government, Harvard Univ., Cambridge, MA
Ann NY Acad Sci; 363:109-122 1981

The role of cost-benefit considerations in regulating carcinogens is discussed in the context of recent policy proposed by the Environmental Protection Agency for control of airborne carcinogens. A brief description of the policy includes its two-part procedure for (1) listing substances that are hazardous, and (2) establishing emission limits for source categories. Concerns expressed are that the policy may result in either controlling a large number of source categories to stringent limits, in which case costs might be disproportionate to benefits, or in choosing a small number of regulatory targets on an ad hoc basis, in which case benefits could be increased by more careful choice. Recommendations for specific changes in the policy are applications of cost-benefit principles, using benzene regulation as an example, and involve the estimation of overall risk in the listing process, use of comparisons of costs and benefits to set priorities, modification of the priority scheme to include a no control category, inclusion of all major control alternatives in the regulatory option analysis, allowance for variations in the stringency of controls within the same source category, and establishment of some means of assuring rough consistency

in the cost-effectiveness of control across source categories. The requirement for a regulatory policy which permits the use of best judgment is stressed. (no Refs)

63. REGULATION OF CARCINOGENS IN FOOD: DISCUSSION.

Hopper PF
General Foods Corporation, White Plains, NY, 10625
Ann NY Acad Sci; 363:37-41 1981

The risk of potentially carcinogenic constituents in the food supply is dealt with by ignoring some of the risks and by performing some sort of risk-benefit assessment of the substance. The benefit of undertaking comprehensive and useful risk-benefit assessment is emphasized. The Delaney clause, which prohibits an additive if it poses a risk of cancer promotes the idea that no benefit shall be deemed to justify any demonstrable risk of cancer, no matter how small. This clause has been modified to permit the use of drugs or substances in animal feeds provided that the substance will not adversely affect the animal and no residues will be found in the edible tissues. While in the past, substances with a risk were dropped in favor of a substance that appears to be less risky, in some areas alternatives are limited. Risks and benefits must be compared more carefully. In addition, many substances once thought harmless have recently been proven to be of some risk. The statutory and administrative changes proposed by the National Academy of Sciences and the Food Safety Council are discussed. Risk/benefit comparisons will have to be restricted, not broad, leaving any decisions to the consumer. The risks inherent in the natural food supply must be studied more precisely and other risks that may reduce these or add to them only in small and tolerable ways must be accepted. (no Refs)

64. INHALATION ANESTHETIC DRUG PRODUCTS; PROPOSED REVOCATION OF REQUIREMENTS FOR STUDIES OF CARCINOGENIC AND TERATOGENIC POTENTIAL.

Food and Drug Administration
Bureau of Drugs, (HFD-30) Food and Drug Administration, 5600 Fishers Lane, Rockville, MD, 20857
Fed Regist; 46(167):43465-43466 1981

The Food and Drug Administration's (FDA) proposal to revoke the regulation that requires manufacturers to conduct studies in animals of halogenated inhalation anesthetic drug products to determine the potential of these drug products to cause cancer and birth defects was reported. Although the FDA believes that section 310.511 is authorized, the agency is proposing to revoke the requirements on the basis that they no longer appear to be necessary. The research that was the original basis for the regulation was found to be deficient, and further studies that have been made since the regulation was announced indicate that the studies required by section 310.511 are not necessary. Revocation of the regulation was thought to have no significant effect on the human environment, therefore an environmental impact study will not be prepared. (8 Refs)

ANALYTICAL AND METHODOLOGICAL ASPECTS OF CANCER EPIDEMIOLOGY

65. THE CENTRAL CANCER REGISTRY OF THE HEALTH COMMISSION OF NEW SOUTH WALES.

McEwin R, Ford J, Goulston K
Health Commission of New South Wales, New South Wales, Australia
Cancer Forum; 5(1):19-24 1981

A review of the New South Wales (NSW) Cancer Registry, a unit of the Health Commission of New South Wales, is presented. The registry has been in operation since 1972 with the following aims: to delineate the nature and extent of cancer in NSW, to provide information which can be used in the control and prevention of cancer, to explore and determine the etiological aspects of cancer, and to describe the natural history of all types of cancer. The 1976 data show that in NSW, the leading sites of cancer in males were lung and colon and rectum; in females, they were breast and colon/rectum. The commonest cancer was skin cancer, but data are not collected for squamous and basal cell carcinoma of the skin. The data in the registry are presented as cross-tabulations for new cases and deaths, by age and sex, related to cancer sites, subsites, and cell types: for the State, Health Regions, Local Government areas, and for various ethnic groups. Applications of the data in the registry are discussed. (2 Refs)

66. THE APPLICATION OF FUNDAMENTALS IN RISK ASSESSMENT.

Kolbye AC
Bureau Foods, Food and Drug Administration, 200 C St., SW, Washington, DC, 20204
ACS Symp Ser; 160:171-185 1981

Current methods of measuring potential hazards to human health need to be evaluated. Extrapolation models are often used in considering regulatory and policy-making decisions about carcinogens.Such models assume that there is no 'safe dose' of a carcinogen, implying that there is no threshold phenomenon associated with cancer induction. Biological damage should be considered in balance with the ability of organisms to repair such damage. The term 'carcinogen' should be better defined. A distinction should be made between carcinogens and cancer risk factors. Carcinogenesis is a multistage process involving progressive events. First damage to DNA is caused by viruses, radiation , or chemical agents. This initiates the cell, creating cancer potential. Cancer growth may be promoted or inhibited by the presence of certain chemicals. A direct-acting carcinogen has the ability to both initiate and promote cancer growth. Some substances that are not carcinogenic cause hyperplastic toxicity.This may have the effect of promoting cancer growth. Some carcinogens initiate cancer at low doses, but must be present in high doses to promote it. Cancer prevention should put first priority on detecting and controlling the worst carcinogens. Hazardous substances should be classified as either first order (initiators or complete carcinogens) or second order (those which produce hyperplastic toxicity or reduce resistance to other patterns of cancer induction). (30 Refs)

67. A VARIANCE COMPONENTS APPROACH TO CATEGORICAL DATA MODELS WITH HETEROGENEOUS CELL POPULATIONS: ANALYSIS OF SPATIAL GRADIENTS IN LUNG CANCER MORTALITY RATES IN NORTH CAROLINA COUNTIES.

Manton KG, Woodbury MA, Stallard E
Dept. Community and Family Medicine, Duke Univ., Durham, NC, 27710
Biometrics; 37(2):259-269 1981

A mixed categorical-continuous variable model is proposed for the analysis of mortality rates. This model differs from other available models, such as weighted least squares and log-linear models, in that the within-cell populations are assumed to be heterogeneous in their levels of mortality risk. Heterogeneity implies that, in addition to the sampling variance considered in other available models, there will be a second component of variance due solely to within-cell heterogeneity. Max likelihood procedures are presented for the estimation of the model parameters. These procedures are based on the assumption that the distribution function for each cell death count is the negative binomial probability function. This assumption is shown to be equivalent to assuming a mixture of Poisson processes with the differential risk levels among individuals within each cell being governed by a two-parameter gamm a distribution. The model is applied to data on lung cancer mortality for 1970-1975 for the 100 counties of North Carolina. The analysis shows that, though a gradient in lung cancer mortality rates exists in space, the gradient is restricted to specific demographic categories identified by race, age and sex. (Author abstract) (6 Refs)

68. THE EFFECT OF A CHANGE IN MUTATION RATE ON THE INCIDENCE OF DOMINANT AND X-LINKED RECESSIVE DISORDERS IN MAN.

Childs JD
Health Sciences Div., Atomic Energy Canada Ltd., Chalk River Nuclear Laboratories, Chalk River, Ontario KOJ 1J0, Canada
Mutat Res; 83(1):145-158 1981

An estimate of mutation frequency for each of the important dominant and X-linked recessive diseases has been reported in order to obtain a direct estimate of the expected increase in dominant disease for any postulated increase in av mutation frequency. From estimates of birth frequency, spontaneous mutation rate and reproductive fitness, the rate of increase of birth frequency could be calculated for each disease based on any given sustained increase in mutation rate. These disorders affect approx 0.6% of live-born persons, including 0.1% who carry a newly-arising mutation. The preceding estimated figures are approx 50% lower than those used by various committees that have assessed the genetic risk to man from ionizing radiation. If the mutation frequency were to double, the frequency of these disorders would be expected to increase in the first generation by 15%, to 0.7% of live births; in the first two generations, the increase would be 24%, and in the ninth generation, 50%. Calculation of the possible increase in these disorders due to exposure to ionizing radiation demonstrated that the estimates made in 1977 by the United Nations Scientific Committee on the Effects of Atomic Radiation may be overestimates by a factor of at least 6. (62 Refs)

GENERAL AND MISCELLANEOUS FACTORS

69. FALLACIES AND DISTORTIONS IN THE EPIDEMIOLOGY OF CANCER: PETO VERSUS EPSTEIN AND SWARTZ.

Harington JS
Cancer Res. Dept., Natl. Cancer Assoc. South Africa, P.O. Box 2000, Johannesburg 2000, South Africa
S Afr J Sci; 77(3):108-111 1981

The arguments surrounding Peto versus Epstein and Swartz in relation to the epidemiology of cancer are presented and discussed. According to Epstein, who is supported by Swartz, occupational carcinogens play an important role in the development of cancer. Peto supports the lifestyle attitude which contends that if you get cancer it is due to the way you live, particularly in relation to diet and smoking. These arguments are discussed in relation to cancer deaths in England, Scotland, Wales, and the United States, in South Africa, in Californian Mormons, and in Seventh-day Adventists. In the last two groups, which have highly disciplined lifestyles, the reduction in cancers of all sites are generally impressive (a 37% decrease in incidence in Mormon males and 33% in females, and about 47% and 32% decrease in mortality in Seventh-day Adventist males and females, respectively). It was suggested that the arena in which Peto, Epstein, and Swartz are arguing is restricted to 5-10% of all deaths in Western society, that is, those due to lung cancer. It was also suggested that the argument is restricted entirely to the developed countries of England, Wales, and the United States. (15 Refs)

70. REGULATION OF CARCINOGENS IN AN IMPRECISE WORLD.

Schneiderman MA
6503 E. Halbert Rd., Bethesda, MD, 20034
Ann NY Acad Sci; 363:217-232 1981

Approaches to prevention of disease or injury include correction of personal behavior and institutional means. Factors that cannot be affected by either means include social pressures, past exposure to hazards, and genetic makeup. Modifying personal behavior has not been effective in reducing hazards. Institutional controls, particularly by government seem to have had the greatest beneficial effect on the public health. The factors to be considered in preventing exposure to hazardous substances are identifying the exposed population, the amount and duration of exposure, excess risk, exposure to other substances, and the effects on risk of exposure to more than one substance. The means of measuring these factors and the results obtained are open to considerable debate. In determining the role business and government should play in regulating substances such as carcinogens, the costs of control must be balanced against the gains to society. The political system in an open society is urged as the best current means of regulation. (35 Refs)

71. RELEVANCE OF EPIDEMIOLOGY TO POLICIES FOR THE PREVENTION CANCER.

Doll R
Imperial Cancer Res. Fund, Cancer Epidemiology and Clinical Trial, Service Unit Univ. Oxford, 9 Keble Rd., Oxford OX1 SQGH, England
JOM; 23(9):601-609 1981

The rate of mortality has declined so much in recent yr and so many diseases have been nearly eliminated as causes of

death that medical attention is now concentrated on a relatively small number. Of these diseases, cancer is of particular interest to industry. Laboratory tests help us to predict whether or not a substance is carcinogenic but the development of knowledge is not yet advanced enough to allow us to rely on them, and this ignorance prevents their use in predicting human risk quantitatively. Epidemiological observations are needed for three main reasons. The first is to detect unsuspected causes of cancer. Secondly, they are needed to demonstrate the size of a risk associated with a particular level of exposure and therefore help to determine the level that is socially acceptable. Thirdly, and most importantly, epidemiological observations help to maintain a sense of perspective. Epidemiology may not be the method of choice for the discovery of preventive measures, as it requires some people to have been affected before it can be employed; but at present its use is essential if efforts are to be concentrated in areas where they will do most good. One such area is the rigorous study of industrial cohorts to determine the degree to which they may be exposed. (Author abstract) (37 Refs)

72. SOCIAL AND ECONOMIC IMPLICATIONS OF CANCER IN THE UNITED STATES.

Hodgson TA
Natl. Center Health Statistics, Dept. Health Human Services, Office Health Res. Statistics and Technology, Public Health Service, Hyattsville, MD, 20782
Ann NY Acad Sci; 363:189-204 1981

The type and magnitude of costs involved in cancer morbidity and mortality are presented in the form of data and discussion. Trends in age-adjusted death rates from various types of cancer in the United States over a period of approx 27 yr are shown. Information on direct and indirect costs, including expenditures for hospital care, physicians' services, and lost earnings (morbidity incurs 7% of the loss in wages associated with mortality) is given. Direct costs account for approx 25% of the total, morbidity accounts for 5%, and the remaining 70% results from cancer mortality. Person-yr of life lost as a result of death are estimated from the expected yr of life remaining. Other costs involve the impact on use and availability of resources, both physical and human, including nonhealth sector direct costs and intangibles such as time lost from other activities. Knowledge of the implications of disease for employment, productivity, prices, investment, gross national product, and of psychosocial costs is sought. So too is an understanding of the relationship of cancer costs to environmental agents and hazards and to socioeconomic and demographic variables. A baseline with which to compare the effects of future changes is needed. Willingness-to-pay for reductions in the probability of suffering morbidity and/or mortality is presented as another concept for assessing the costs of illness. (no Refs)

73. CARCINOGENIC RISK ASSESSMENT: A GUIDE TO THE LITERATURE.

Krewski D, Brown C
Health Protection Branch, Health and Welfare Canada, Ottawa K1A 1B8, Canada
Biometrics; 37(2):353-366 1981

An overview of the problems involved in assessing the carcinogenic potential of environmental chemicals is presented. Statistical aspects of the safety evaluation process are noted and appropriate references to the literature are provided. (Author abstract) (287 Refs)

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NOTICE OF CURRENT REVIEWS: CARCINOGENESIS

As an additional service to readers of carcinogenesis (CK series) CANCERGRAMS, each issue now provides a bibliography of review articles of interest to carcinogenesis researchers, selected from journals screened for that month's CANCERGRAMS.

CHEMICAL CARCINOGENESIS

1. TOXICOLOGICAL ASPECTS OF POLYCYCLIC AROMATIC HYDROCARBONS (PAH).

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Magrath IT
Pediatric Oncology Branch, Div. Cancer Treatment, NCI, NIH, Public Health Service, United States Dept. Health and Human Services, Bethesda, MD, 20205
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Usp Sovrem Biol; 91(3):409-418 1981
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J Gen Virol; 54(part1):1-8 1981

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Durkin PR, Santodonato J
Center for Chemical Hazard Assessment, Syracuse Res. Corporation, Merill Lane, Syracuse, NY, 13210
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Cancer Genet Cytogenet; 4(1):69-88 1981

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ENVIRONMENTAL AND OCCUPATIONAL CARCINOGENESIS

SERIES CK02 No. 82/02

FEBRUARY, 1982

This Cancergram is a service of the INTERNATIONAL CANCER RESEARCH DATA BANK (ICRDB) PROGRAM of the U.S. National Cancer Institute. Every few weeks, an updated Cancergram containing abstracts of selected cancer-related articles recently published in more than 3000 journals, and dealing with the topic indicated by the above title, is sent to researchers working in this area. These researchers are identified on the basis of the description of their current research project that has been submitted to the ICRDB Program, directly or via granting agencies.

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U.S. DEPARTMENT OF HEALTH AND HUMAN SERVICES
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ENVIRONMENTAL FACTORS: POLLUTION

1. MUTAGENICITY OF MUNICIPAL WATER OBTAINED FROM AN AGRICULTURAL AREA.

Heartlein MW, DeMarini DM, Katz AJ, Means JC, Plewa MJ, Brockman HE
(c/o Brockman) Dept. Biological Sciences, Illinois State Univ., Normal, IL, 61761
Environ Mutagen; 3(5):519-530 1981

The lake water from Lake Bloomington, Illinois, and the tap water made from it were tested for mutagenicity in the Salmonella/microsome test, samples of unconcentrated water were tested in the waxy-90 reverse-mutation tests in Zea mays, and analytical studies involving gas chromatography and mass spectroscopy were combined with the mutation studies to determine which chemicals were present in the water samples. Samples were collected monthly from May to October 1979 and concentrated 3,000x with XAD-2 resin. The drinking water was mutagenic in the Salmonella/microsome test, with the May water concentrate being 60x more mutagenic than the other concentrates in TA100 in the presence of S-9 mix. Many of the concentrates were toxic to bacteria in the absence of S-9 mix. A number of organic contaminants were found by chemical analysis that were absent from control concentrates prepared from deionized and distilled treated well water. No mutagenicity was detected in the reverse mutation test with unconcentrated lake and tap water. Thus, contamination of drinking water with agricultural and/or industrial chemicals may result in a potential health hazard. (37 Refs)

2. THE RELATIONSHIP BETWEEN WATER QUALITY AND HEALTH IN THE LONDON AREA.

Beresford SA
Dept. Clinical Epidemiology and General Practice, Royal Free Hosp. Sch. Medicine, Pond St., London NW3 2QG, England
Int J Epidemiol; 10(2):103-115 1981

In a retrospective study of the relationship between reuse of water and hazards to health, the mortality experience from different causes, principally cancer, was examined for 29 boroughs and districts in the London area for the period 1968 to 1974. Information concerning the source of water supply to each borough was obtained both for the current situation, and historically back to 1926. Socioeconomic characteristics of the boroughs were extracted from 1971 census data. Differential mortality experiences for each sex were analyzed using the standardized mortality ratio for ages 25 to 74. Most of the causes of death examined were associated with one or more of the socioeconomic characteristics of the boroughs. These socioeconomic characteristics accounted for the statistical associations between water reuse and mortality for each cause studied, except male stomach cancer, where a weak residual association remained. This association disappeared when variation in the size of boroughs was taken in to account. (Author abstract) (34 Refs)

3. SOURCES, TRANSPORT AND ALTERATIONS OF METAL COMPOUNDS: AN OVERVIEW. I. ARSENIC, BERYLLIUM, CADMIUM, CHROMIUM, AND NICKEL.

Fishbein L
Dept. Health, Education, and Welfare, Food and Drug Admin., Natl. Center for Toxicological Res., Jefferson, AR, 72079
Environ Health Perspect; 40:43-64 1981

Current knowledge of natural and industrial sources, transport, and alterations of arsenic, beryllium, cadmium, chromium, and nickel is summarized. Aspects of waste disposal and increased burning of fossil fuels are discussed as possible hazards. Further research is recommended. (166 Refs)

4. THE CARCINOGENICITY OF ARSENIC.

Pershagen G
Dept. Environmental Hygeine, Karolinska Inst., Stockholm, Sweden
Environ Health Perspect; 40:93-100 1981

Assessment of arsenic (As) as a carcinogen is reviewed. As occurs widely in the environment, being found in various ores, coal, tobacco, pesticides, water, air, and foodstuffs such as marine fish and crustaceans, swine and poultry, as well as in industrial processes. Distinguishing between organic and inorganic As is important in determining carcinogenicity. Only inorganic As has so far been linked to cancer. Epidemiological studies have associated lung cancer with occupational exposure to As in pesticide workers, copper smelters, and vintners using pesticides. Skin cancer has been associated with exposure to As in drinking water in several reports. Neoplastic changes in the skin include Bowen's disease and basal and squamous cell carcinomas. Experimental studies in animals have not provided conclusive evidence of AsS carcinogenicity. Investigation of metabolism indicates that As may interfere with DNA repair mechanisms. Recommendations for future research are made. (101 Refs)

ENVIRONMENTAL FACTORS: COMMERCIAL PRODUCTS

5. EPIDEMIOLOGICAL STUDIES INTO THE POSSIBLE CARCINOGENICITY OF HAIR DYES.

Clemmesen J
(c/o P. Lohman), Medical Biological Lab. TNO., P.O. Box 45, 2280 AA Rijswijk, The Netherlands
Mutat Res; 87(1):65-79 1981

Epidemiological studies of the carcinogenicity of hair dyes are complicated by (1) too broad a definition of occupation, with hazards to specific job categories being overlooked, and too narrow a definition, making the surveyed group too small to yield significant results, (2) exposure to competing or cooperating carcinogens, (3) uncertain influence of life style, (4) latency period and changes in occupation, and (5) changes and regional variations in occupational classification. A review of reports on cancer incidence among barbers, hairdressers, and their customers is made with respect to urinary bladder, lung, larynx, and breast. The evidence is still apparently insufficient to support a link between exposure to hair dye and cancer. Further research with more statistically valid sampling is recommended. (30 Refs)

6. OCCUPATIONAL HYGIENIC ASPECTS OF ASBESTOS AS A RISK FACTOR.

Konetzke GW, Beck B
Zentralinstitut fur Arbeitsmedizin der DDR, Nolderstrasse 40-42, DDR-1134 Berlin, E. Germany
Arch Geschwulstforsch; 51(7):567-574 1981

A retrospective study of 915 cases of mesothelioma diagnosed during the period 1970-1975 is reported. Pleural mesothelioma was diagnosed in 85.8% of all cases, peritoneal mesothelioma in 12.1%, pericardial mesothelioma in 0.9%, and

mesothelioma of other localizations in 1.2%. Pleural mesotheliomas were twice as frequent in men as in women, while peritoneal mesotheliomas were 2.5x more frequent among women. Diagnosis was established only at autopsy in 60% of all cases. The 2-yr mortality was 95.4%. Occupational exposure to asbestos was established in 332 cases (36.7%), and nonoccupational exposure in 7 (0.8%). Exposure to asbestos was a possibility in 82 cases (9.1%), there was no exposure to asbestos in 305 cases (33.7%), and the data were insufficient for evaluation in 178 cases (19.7%). For the 332 occupationally exposed patients the length of exposure was shorter than 1 yr in 3%, 1-2 yr in 9.3%, and more than 30 yr in 20.6%. Only 7.5% of the patients were still being exposed to asbestos at the time of diagnosis. The latent period was more than 30 yr in 65.7% of all cases, and more than 50 yr in 22%. Asbestosis was found in 23.9%. (36 Refs) (In GER)

ENVIRONMENTAL AND OCCUPATIONAL FACTORS: RADIATION

7. MALIGNANT MELANOMA AMONG EMPLOYEES OF LAWRENCE LIVERMORE NATIONAL LABORATORY.

Austin DF, Synder MA, Reynolds PJ, Biggs MW, Stubbs HA
Resource for Cancer Epidemiology, State Dept. Health Services, 1450 Broadway, Oakland, CA, 94612
Lancet; 2(8249):712-716 1981

Nineteen cases of malignant melanoma (MM) were observed during 1972-77 among approx 5,100 employees of the Lawrence Livermore National Laboratory, where high energy physics research is conducted. This number was significantly higher (p less than 2 x 10(-6)) than that expected in a comparable age/race/sex/geographical segment of the population of the San Francisco Bay Area. That excess seemed to occur only among laboratory employees and not among the surrounding community, which suggests that an occupational factor is responsible. Preliminary case-comparison findings suggest that MM risk is not associated with length of employment at the laboratory nor with type of monitored radiation exposure. Although the data did not support an association between MM incidence and all scientific job classifications combined, an excess relative risk was observed among chemists. The reasons for the MM excess have not been identified. (Author abstract) (37 Refs)

8. ANALYSIS OF STRUCTURAL CHROMOSOME CHANGES AND SCE AFTER OCCUPATIONAL LONG-TERM EXPOSURE TO ELECTRIC AND MAGNETIC FIELDS FROM 380 KV-SYSTEMS.

Bauchinger M, Hauf R, Schmid E, Dresp J
Strahlenbiologisches Institut, GSF, D-8042 Neuherberg-Munchen, W. Germany
Radiat Environ Biophys; 19(4):235-238 1981

Chromosome analyses were performed in peripheral lymphocytes of 32 healthy male workers occupationally exposed for more than 20 yr to 50 Hertz alternating electric and magnetic fields in 380 kilovolt switchyards. All of the subjects were married, and all but one had at least one child. Twelve workers were moderate or heavy smokers, four had stopped smoking within the last 4 yr, and 16 were nonsmokers. The control group was made up of 22 healthy male workers (10 smokers, 12 nonsmokers) of similar age an d occupation but without exposure to electromagnetic fields. There were no significant differences in the yield of gaps, acentrics, or dicentric + ring chromosomes between the switchyard workers and controls. No significant differences could be demonstrated for the sister-chromatid exchange-frequencies in the control group and field-exposed group taking into account a subdivision of smokers and nonsmokers. (13 Refs)

9. ON THE QUESTION OF CANCER INDUCTION BY SMALL X-RAY DOSES.

Webster EW
Dept. Radiology, Harvard Medical Sch., Massachusetts General Hosp., Boston, MA, 02114
AJR; 137(4):647-666 1981

There is no proven body of fact that establishes an increase in human cancer after low doses of x or gamma radiation such as those received environmentally, occupationally, or from medical diagnostic procedures; that is, radiation levels below about 10 rad (0.1 Gy). This paper reviews the principal low dose epidemiologic studies that have investigated possible cancer increases. The results of these studies are negative, equivocal, or, when positive, invalidated by methodologic defects or by inconsistency with the feasible carcinogenic effect of background radiation. Despite the lack of direct evidence however, it will never be possible to exclude a very small cancer risk from even the lowest radiation levels, primarily because of statistical limitations in the design of epidemiologic studies. Estimates of cancer risk from low levels of x or gamma ray exposure are therefore based on assumptions regarding the relation between cancer increases and radiation dose. The statistical uncertainties of the meager human data at low doses do not permit unique relations to be established. Nevertheless recent radiobiologic investigations of dose/effect relations for neoplasms in animal populations, for chromosomal damage in human cells, and for malignant transformation in cultured mammalian cell lines suggest that a linear-quadratic relation, when fitted to the human data, provides a reasonable and conservative basis for risk estimation. (Author abstract) (77 Refs)

OCCUPATIONAL FACTORS: SPECIFIC AGENTS OR INDUSTRIES

10. CANCER MORTALITY OF A GROUP OF CANADIAN WORKERS EXPOSED TO VINYL CHLORIDE MONOMER.

Theriault G, Allard P
Dept. Social and Preventive Medicine, Sch. Medicine, Laval Univ., Ste-Foy, Quebec, Canada
JOM; 23(10):671-676 1981

The present study was undertaken to find out whether there was an excess of cancer mortality from causes other than angiosarcoma of the liver among a group of workers heavily exposed to vinyl chloride monomer (VCM). The mortality of 451 workers exposed to VCM for more than 5 yr was compared with that of 870 workers from the same company who had not been exposed to VCM. The relative risk for digestive cancer was significantly higher than 1 (6.25, confidence interval 2.69 to 14.52) in the exp osed group. The standardized mortality ratio (SMR) for digestive cancer was also higher (SMR 259.26 p less than 0.01) than that of the general population. No other cancer was in excess. Since the exposed workers are known to

have had a cigarette smoking experience similar to that of those who were not exposed, it is concluded that the association between lung cancer and VCM exposure, if present, is indeed rather small. (Author abstract) (25 Refs)

11. ASBESTOS EXPOSURE IN THE MONFALCONE AREA. A SOCIAL AND PATHOLOGICAL STUDY OF 100 AUTOPSY CASES.

Bianchi C, Brollo A, Miniussi C, Bittesini L
Servizio di Antomia e Istologia Patologica, Ospedale Generale Provinciale, Via Rossini 1, 34074 Monfalcone, Italia
Tumori; 67(4):279-282 1981

Monfalcone is a coastal town with important shipyards. In the present investigation hyaline pleural plaques, lung asbestos bodies, and occupational history were studied in 100 consecutive autopsy cases, collected at the hospital of Monfalcone. Pleural plaques were observed in 72% of males and in 33% of females. Asbestos bodies were found after chemical digestion of pulmonary tissue in 94 cases, and an approx estimation of their amount showed high or very high numbers in 39 cases. Occupational history, obtained from patients' relatives, was suggestive of occupational asbestos exposure in 60 cases, with 37 subjects having worked in the shipyards. Thirteen other patients had had a probable domestic exposure to asbestos. The severity of asbestos exposure in the Monfalcone area is emphasized. (Author abstract) (14 Refs)

12. INORGANIC FIBERS IN LUNG TISSUE FROM PATIENTS WITH PLEURAL PLAQUES OR MALIGNANT MESOTHELIOMA.

Gylseth B, Mowe G, Skaug V, Wannag A
Inst. Occupational Health, P.O. Box 8149, Dep, Oslo 1, Norway
Scand J Work Environ Health; 7(2):109-113 1981

The concentration of asbestos (ASB) in lung tissue from 15 patients with malignant mesothelioma of the pleura and from 14 patients with pleural plaques was compared with that of a reference group comprising 12 patients who died of coronary or cerebrovascular diseases. All patients with mesothelioma had ASB concentrations greater than 10(6) fibers/g dried tissue; four had concentrations greater than 100 x 10(6) fibers/g. Of the patients with pleural plaques, two had values less than 10(6) fibers/g, and only one showed fiber concentration greater than 10 x 10(6) fibers/g. All 12 referents had concentrations not greater than 10 x 10(6) fibers/g. The persons who were not occupationally exposed to ASB had less than 1-2 million fibers/g tissue. Insulation workers and workers in the ASB cement industry had the highest values. One woman in the mesothelioma group had occupational exposure of short duration at the age of 20, indicating that a significant number of fibers is retained by the lung for a long time (latency pe riod = 59 yr). The mesothelioma group had 18x higher values than the reference group, and the pleural plaque group had 4x higher values than referents. The data indicate a significant difference in lung fiber burden between the respective groups. (12 Refs)

13. THE SELLING OF ASBESTOS.

Castleman BI, Vera Vera MJ
No affiliation given
Ecologist; 11(3):108-117 1981

Industrial and legal aspects of the asbestos health hazard are reviewed. The history of asbestos use in this century and the cover-up of health hazards is recounted, with a summary of the primary industrial uses and products containing asbestos. Past handling of health hazards by industry and current practices in third world nations by multinational corporations are described. Several accounts of individual companies are included. (40 Refs)

14. CARCINOGENICITY, MUTAGENICITY AND TERATOGENICITY OF NICKEL.

Leonard A, Gerber GB, Jacquet P
Dept. Radiation Biology, C.E.N.-S.C.K., B-2400 Mol, Belgium
Mutat Res; 87(1):1-15 1981

Nickel is widely used in the metallurgical industry. It is not released into the environment in large quantities, but poses an occupational hazard to human health. Ingested nickel is not readily absorbed, hence it is relatively nontoxic. Inhaled nickel is toxic in certain forms. Nickel carbonyl at 30 ppm for 30 min is lethal. Half-life in the body is less than 1 wk. Metallic nickel can cause sensitization of the immune system. Nickel compounds are carcinogenic in inverse proportion to their solubility in aqueous media. Nickel sulfide appears to have the greatest carcinogenicity. The lungs and nasal tissue are favored sites of nickel-induced cancers. Tumor types induced include undifferentiated sarcoma, fibrosarcoma, carcinoma, leukemia, and lymphoma. The mutagenicity of nickel is uncertain: nickel may be mutagenic in mammals but not in microorganisms. It is capable of crossing the placenta and has teratogenic effects, including fetal mortality, exencephaly, and cystic lung disease, in some species. Effects may be delayed by retarded transfer across the placenta. (129 Refs)

15. ROLE OF COBALT, IRON, LEAD, MANGANESE, MERCURY, PLATINUM, SELENIUM, AND TITANIUM IN CARCINOGENESIS.

Kazantzis G
TUC Centenary Inst. Occupational Health, London Sch. Hygiene and Tropical Medicine, Keppel St., London WC1E 7HT, England
Environ Health Perspect; 40:143-161 1981

Experimental, clinical, and epidemiological studies of the carcinogenicity of cobalt, iron, lead, manganese, mercury, platinum, selenium, and titanium are reviewed. Sources of exposure to these metals and their mutagenic effects are discussed. Excess lung cancer mortality has been observed in hematite miners, but occupational exposure to the other metals is not associated with an increased cancer risk. Platinum coordination complexes used in cancer chemotherapy are electrophilic reactants and thus capable of cancer initiation. Cobalt oxide and cobalt sulfate produce injection site and renal tumors in animals, and both are mutagenic. Manganous acetylacetonate and dichlorodicyclopentadienyl titanium also give rise to injection site tumors, but only the latter is mutagenic. Mercury compounds do not appear to be carcinogenic, although some produce genetic damage. The mutagenicity and carcinogenicity of selenium have not been established. (142 Refs)

16. CHROMOSOME ABERRATIONS AND THEIR RELEVANCE TO METAL CARCINOGENESIS.

Vainio H, Sorsa M
Dept. Industrial Hygiene and Toxicology, Inst. Occupational Health, Haartmaninkatu 1, SF-00290 Helsinki 29, Finland
Environ Health Perspect; 40:173-180 1981

Current knowledge of the effects of metals on chromosomes is reviewed, and gaps in this knowledge and future research needs are discussed. The subjects covered include detection of somatic chromosome damage by analysis of metaphase chro-

mosome aberrations (CAs), scoring for sister chromatid exchange, and scoring for micronuclei in maturing RBC; genetic effects of somatic CAs; chromosome changes in malignancies; correlations between CAs and immunologic impairment and aging; CAs in humans exposed to metal compounds (arsenic, cadmium, chromium, nickel, mercury, and lead); and the health implications of chromosome damage caused by metal exposure. A group of exposed persons with increased CA levels has a higher risk of developing cancer than a group with no increase in CAs. However, the quantitative risk estimate cannot be deduced from chromosome data for a single individual; on an individual basis, increased chromosome damage may also point to inherited susceptibility. (73 Refs)

17. MORTALITY AMONG RUBBER WORKERS. III. CAUSE-SPECIFIC MORTALITY, 1940-1978.

Delzell E, Monson RR
Dept. Epidemiology, Harvard Sch. Public Health, 677 Huntington Ave., Boston, MA, 02115
JOM; 23(10):677-684 1981

This report describes mortality occurring between 1940 and mid-1978 among 29,087 men and women employed in a rubber plant for at least 2 yr. Mortality patterns for the period July 1, 1974, to July 1, 1978, were compared to previously published findings for January 1, 1940, through June 30, 1974. Expected numbers of deaths were based on U.S. general population mortality data. There were excess deaths from bladder cancer and leukemia among white male union members during both follow-up periods. During recent follow-up of white male union members employed for at least 5 yr, there were excesses in deaths from three additional cancers: esophageal cancer (11 observed/4.8 expected), biliary and liver cancer (6 observed/3.3 expected) and lymphoma and multiple myeloma (14 observed/5.8 expected). Evidence from other studies of rubber workers suggests that observed excesses in deaths from bladder cancer and leukemia are related to workplace exposures. The present findings suggest that occupational exposures etiologically relevant to these diseases may not have been reduced in recent yr or that sufficient time has not elapsed for such reductions to result in decreased mortality. Further investigation is required to clarify the contribution of occupational factors to observed excesses in deaths from cancers of the esophagus and the biliary passages and liver and from lymphoma and multiple myeloma. (Author abstract) (26 Refs)

18. FORMALDEHYDE EXPOSURE IN WORK AND THE GENERAL ENVIRONMENT: OCCURRENCE AND POSSIBILITIES FOR PREVENTION.

Niemela R, Vainio H
Inst. Occupational Health, Laajaniityntie 1, SF-01620 Vantaa 62, Finland
Scand J Work Environ Health; 7(2):95-100 1981

The health hazards of formaldehyde (FOR), its occurrence in the environment, and prevention of existing hazards are reviewed. FOR is used extensively in a wide spectrum of commercial processes. Irritation of the eyes and respiratory tract occurs after exposure to low atmospheric concentrations of FOR; exposure to high concentrations causes severe difficulty in breathing, burning of the eyes, nose and trachea, and intense and severe coughing. Inflammatory and contact dermatitis are caused by direct contact. Animal studies have demonstrated mutagenicity and carcinogenicity of FOR. Dose-related histological changes in rats and mice have been observed, including rhinitis, epithelial hyperplasia, and squamous metaplasia. Airborne FOR has a threshold limit of 2 cubic cm/cubic meter in Finland. FOR is used in the textile industry, the tanning and manufacturing of shoes, the manufacturing of particle board and plywood, the manufacturing of wooden furniture, the construction industry, and in hospitals. FOR is formed during the thermal decomposition of many organic substances and evaporates from construction materials and furniture in dwellings. The changes in the building industry caused by increased energy costs may aggravate the hazard of FOR. Suggestions for the control and elimination of FOR hazards are made. (24 Refs)

19. CANCER RISK IN PESTICIDE-EXPOSED AGRICULTURAL WORKERS.

Barthel E
Bezirksfachkrankenhaus fur Lungenkrankheiten und Tuberkulose, Amsee 1, DDR-2060 Waren (Muritz), E. Germany
Arch Geschwulstforsch; 51(7):579-585 1981

Cancer risk was studied in 1,658 agricultural workers who had been exposed to pesticides for at least 5 yr in a cohort study. Malignant tumors were found in 169/1,658 cases; the tumors were confirmed histologically in 124/169 cases. Tumors of the esophagus, nasal cavity, soft tissues, lymphoid tissue, skin melanoma, lymphosarcoma, and lymphocytic leukemia were diagnosed in 1 case each. Other tum ors included stomach in 21 cases, rectum in 7, liver in 2, gallbladder in 2, pancreas in 7, larynx in 4, trachea, bronchi, and lungs in 59, skin in 19, prostate in 11, penis in 2, urinary bladder in 7, brain in 2, and thyroid gland in 2. Lymphogranulomatosis was diagnosed in two cases, plasmocytoma in three, and myeloid leukemia in two. The difference between the exposed group and general epidemiological data was significant for lung cancer only (50 cases among exposed patients from 1970-1978 versus an expected value of 27.5). The av length of exposure of the lung cancer patients was 13.6 yr (6-23 yr), and the av latent period was 17.5 yr (6-29 yr). The higher incidence was not related to smoking habits, which suggests the etiological role of pesticide exposure. Based on intraindividual exposure data, experimental data, and on the use of pesticides in East Germany, the pesticides of greatest concern are arsenic-containing compounds, dicophane (DDT), lindane, and phenoxy acids. (21 Refs) (In GER)

EPIDEMIOLOGICAL FINDINGS INVOLVING SPECIFIC AREAS

20. ESOPHAGEAL CANCER AMONG BLACK MEN IN WASHINGTON, D.C. I. ALCOHOL, TOBACCO, AND OTHER RISK FACTORS.

Pottern LM, Morris LE, Blot WJ, Ziegler RG, Fraumeni JF
Environmental Epidemiology Branch, Div. Cancer Cause and Prevention, NCI, NIH, Public Health Service, U.S. Dept. Health and Human Services, Bethesda, MD, 20205
JNCI; 67(4):777-783 1981

A case-control study involving interviews with the next of kin or close friends of 120 black males who recently died of esophageal cancer and 250 similarly aged black males who died of other causes was undertaken to discover reasons for the exceptionally high mortality from this cancer in Washington, DC. The age-adjusted annual death rate in Washington, DC, for nonwhite males, 1970-75, was 28.6/100,000 far higher than the national rate of 12.4/100,000 and the rates in other

metropolitan areas of the country. The major factor responsible for the excess was alcoholic beverage consumption, with an estimated 81% of the esophageal cancers attributed to its use; high use of alcoholic beverages was also found among the controls. The relative risk (RR) of esophageal cancer associated with use of alcoholic beverages was 6.4 (95% confidence interval = 2.5, 16.4). The RR increased with amount of ethanol consumed and was highest among drinkers of hard liquor, although the risk was also elevated among consumers of wine and/or beer only. The RR associated with cigarette smoking was 1.9 (1.0, 3.5) when controls with smoking-related causes of death were excluded but declined to 1.5 (0.7, 3.0) when adjusted for ethanol consumption. Significant differences of approx twofold were found between low and high levels of (a) consumption of fresh or frozen meat and fish, fruits and vegetables, and dairy products and eggs and (b) relative wt (wt/ht2). The in verse trends with these general measures of nutritional status were not explained by alcoholic beverage consumption of socioeconomic status as measured by educational level. (Author abstract) (23 Refs)

21. CANCER AND DRINKING WATER IN LOUISIANA: COLON AND RECTUM.

Gottlieb MS, Carr JK, Morris DT
Dept. Medicine, Dept. Biostatistics and Epidemiology, Tulane Univ. Sch. Medicine, 1430 Tulane Ave., New Orleans, LA, 70112
Int J Epidemiol; 10(2):117-125 1981

A case-control mortality study conducted in 20 parishes (counties) of South Louisiana to determine what relationship drinking Mississippi River water might have on mortality from colon or rectal cancer, found a significant risk for rectal cancer associated with surface water. Rectal and colon cancer deaths (692 and 1,167) from 1969 to 1975 were matched to non-cancer deaths by age at death (+-5 yr), yr of death, sex and race, and within groups of parishes with similar industrial and urban-rural characteristics, each group being defined so as to ensure that it included as nearly as possible equal populations using water from ground and surface sources, based on the 1970 census. Colon cancer did not relate significantly to any water variable, but rectal cancer associated strongly with surface, or Mississippi River, water. The odds ratio for rectal cancer between those who were born and died on ground water was 2.07 with 95% CI: (1.49-2.88). A multi-dimensional emergency contingency table analysis found the association between rectal cancer and surface water significant at the 0.0001 level and not dependent on age, race sex or yr of death. The risk for men was slightly higher than for women, but both sexes showed an increased risk. Chlorination also associated significantly with rectal cancer. Among those who used river water, the risk increased inversely as the distance from the mouth, with greater risk downstream from the many industries which line the river. (Author abstract) (24 Refs)

22. CANCER INCIDENCE IN QUEBEC (1971-1975) AND CARTOGRAPHY.

Thouez JP, Beauchamps Y. Dubois A, Simard A
Departement de geographie, Universite de Montreal, C.P. 6128, Montreal, Quebec, Canada
Union Med Can; 110(9):798-802 1981

A method is described for the geographic mapping of regional variations in the incidence of certain types of cancer observed in the province of Quebec between 1971 and 1975. Age-adjusted rates of cancer show a higher incidence of cancer in males. Cancer mortality rates in Quebec province have been found to be greater than those observed for Canada as a whole. The existence of artifical regional variations resulting from methods of data collection and analysis has been proposed. Geographic maps of standardized incidence ratios for breast, intestine, prostate, cervix, rectosigmoid, trachea, bronchi, and lungs c ancers in the 74 federal counties of Quebec is presented. These representations indicated that cancers of trachea, bronchi, and lungs occur at similar rates in urban and rural areas. Breast cancer occurs more often in urban areas as compared with cervix cancer. Cancers of the rectum and intestine show similar geographical distributions. Prostate cancer shows many major geographic concentrations. (14 Refs) (In FRE)

23. THE RELATION OF MORTALITY IN ENGLAND AND WALES 1969-73 TO MEASUREMENTS OF AIR POLLUTION.

Chinn S, Du VFlorey C, Baldwin IG, Gorgol M
Dept. Community Medicine, St. Thomas's Hosp. Medical Sch., London, SE1 7EH, England
J Epidemiol Community Health; 35(3):174-179 1981

Mortality of people aged 45-74 in the county and London boroughs of England and Wales was examined for correlation with atmospheric smoke and sulfur dioxide levels. Levels of smoke showed significant positive simple correlations with mortality rates for most causes of death at all ages; levels of SO2 were less strongly associated with mortality. However, weighted multiple regression analyses, which took into account socioeconomic variables such as social class and population density, as well as other variables including latitude, mean minimum temperature, and rainfall (but not water hardness or smoking), revealed no consistent relation of smoke or SO2 with mortality from all causes or with specified causes commonly associated with pollution. No significant association was found between smoke and mortality due to respiratory diseases. Comparison with certain studies conducted during the previous two decades suggests that a decline in the strength of associations has occurred in parallel with declining levels of pollutants. (18 Refs)

24. REPORT OF THE SWEDISH MELANOMA STUDY GROUP: INCREASING FREQUENCY OF MALIGNANT SKIN MELANOMA. IMPROVEMENTS IN DIAGNOSIS AND THERAPY.

Bjurulf P, Smedby B
Radiumhemmet, Stockholm, Sweden
Lakartidningen; 78(34):2849-2850 1981

A recent report of the Swedish Malignant Melanoma Study Group shows an increase in the frequency of malignant skin melanoma in Sweden, similar to other countries with white populations at the same latitudes. While 158 cases were recorded in 1958, 580 new cases were recorded in 1972, and 700-800 new cases are expected annually during the near future. Increased exposure to sunlight is assumed to be an etiological factor. Melanoma of localizations other than the skin has not shown any increase in frequency. The histological type, Clark's level of invasion, and the tumor thickness should be established for adequate therapy. Excision together with the muscular fascia with healthy margin is the traditional surgical treatment. In view of the low frequency of recurrence in the case of thin melanoma, limited excision with a free margin of 1-2 cm is employed recently in some hospitals, if the tumor thickness is 0.8 mm or less. No evident prolongation of survival has been achieved by immunotherapy in patients with disseminated disease. Objective reduction of the tumor size can be achieved by

chemotherapy with melphalan, actinomycin D, dacarbazine, and nitrosourea compounds in approx 20% of the patients. Good results were obtained in individual patients with local perfusion with cytostatics, often combined with hyperthermia. Radiotherapy (600 rads 1x/wk, total dose 4,200 rads) can have a certain palliative effect in certain patients with inoperable recurrences. The results of adjuvant chemotherapy and immunotherapy after excision in patients with poor prognosis can not yet be evaluated. (no Refs) (In SWE)

25. AMBIENT AIR POLLUTION AND LUNG CANCER INCIDENCE IN 1965-1975 AMONG NATIVE POPULATION OF AN INDUSTRIAL CITY.

Zemla B
Cancer Epidemiology Unit, Inst. Oncology, 44-101 Gliwice, Poland
Neoplasma; 28(3):355-361 1981

Lung cancer incidence in Zabrze (Upper Silesian Region, Poland) in the yr 1965-1975 among the native population was analyzed in connection with industrialization level and air pollution. In comparison with other towns or rural counties of Poland, the native population of the industrial city Zabrze is characterized by a lower risk of lung cancer in spite of the fact that the native population of the city has been exposed for a long time to different harmful chemical impurities of air. (Author abstract) (20 Refs)

26. CANCER IN THE THIRD WORLD: BANGLADESH 1980.

Lynch HT, Rahim MA
Dept. Preventive Medicine/Public Health, Creighton Univ. Sch. Medicine, Omaha, NE, 68178
Am J Public Health; 71(10):1158-1161 1981

Bangladesh exemplifies all of the problems of Third World countries: poverty, hunger, reduced longevity, and an illiteracy rate hovering at more than 80%. The current status of oncology in Bangladesh was surveyed. Staff physicians, deans, medical students, nurses, and patients at six of the eight medical college hospitals, seven village hospitals, and a large private hospital provided background and clinical material. There are no medical or surgical oncologists in Bangladesh. The eight qualified radiation therapists are able to provide only meager diagnostic potential or radiation therapy with their antiquated equipment. Pathology service was severely handicapped by understaffing and outmoded equipment. With a relatively modest investment, epidemiological studies could be undertaken and an effective cancer control program established since oral and cervical cancers are common. (Author abstract) (10 Refs)

27. A NEW VIEW OF THE ETIOLOGY OF NASOPHARYNGEAL CARCINOMA.

Hirayama T, Ito Y
(c/o Ito) Dept. Microbiology, Faculty Medicine, Kyoto Univ., Kyoto 606, Japan
Prev Med; 10(5):614-622 1981

. Epidemiological studies showed a high incidence of nasopharyngeal carcinoma (NPC) in southern regions of China. Also found in these regions are plants of the Euphorbiaceae family, including Croton tiglium (the source of croton oil) and other species used as herbal drugs. Interaction of herbal drugs and anti-Epstein-Barr virus (EBV) titers was noted. Use of the herbal drugs was related to nasal infection by microbes such as Fusobacterium. The combined effects of drug use and EBV induction were synergistic rather than additive. Fusobacteria in culture produced n-butyric acid, which had a low, but definite EBV-inducing activity in human lymphoblastoid P3HR-1 cells. Combined treatment with nanog concentrations of croton oil and n-butyrate produced marked increase in EBV antigens in EBV genome-carrying P3HR-1 and Raji cells. Apparently EBV is induced and activated by the combination of bacterial fatty acid and herbal oils. It is suggested that the activated EBV then initiates steps resulting in NPC. (33 Refs)

28. ATLAS OF CANCER MORTALITY IN THE PEOPLE'S REPUBLIC OF CHINA. AN AID FOR CANCER CONTROL AND RESEARCH.

Li JY, Liu BQ, Li GY, Chen ZJ, Sun XD, Rong SD
Dept. Cancer Epidemiology, Cancer Inst. Chinese Acad. Medical Sciences, 2, Yabao Lu, Chaoyang, Qu, Beijing, People's Republic of China
Int J Epidemiol; 10(2):127-133 1981

A set of maps which display the patterns of cancer mortality in China has been prepared and published by the China Map Press. The 200 page atlas was edited by the National Cancer Control Office of the Ministry of Health and the Nanjing Institute of Geography of the Chinese Academy of Sciences on the basis of a nation-wide cancer mortality survey. The Cancer Institute of the Chinese Academy of Medical Sciences with related Colleges, Universities and Institutes provided the data and took part in the preparation of the atlas, which is published both in Chinese and English. Fifty eight maps and several dozen charts depict, in seven colors, the mortality distribution in the 2,392 counties and county-level administrative units of nine types of cancer common in China - stomach, esophagus, liver, cervix, lung, colon and rectum, breast, nasopharynx, and leukemia as well as five less common cancers - brain tumors, malignant lymphoma, cancer of the bladder, of the penis, and choriocarcinoma. The Atlas of Cancer Mortality will be an important new aid for cancer control and research in the People's Republic of China. (Author abstract) (10 Refs)

OTHER EPIDEMIOLOGICAL FINDINGS

29. CARCINOGENESIS OF GASTRIC CANCER WITH SPECIAL REFERENCE TO ETIOLOGICAL ASPECTS.

Schmahl D
Deutsches Krebsforschungszentrum, Postfach 101 949, D-6900 Heidelberg 1, W. Germany
Zentralbl Chir; 106(15):997-1004 1981

The article discusses possible etiological factors for the carcinogenesis of sto mach tumors. Apart from genetic factors, stomach carcinogenesis may be attributed to the exposure of the stomach to carcinogenic substances taken in with the food, such as pyrolysis products of certain amino acids, N-nitroso compounds or disturbances of the physiological function of the stomach, for example pathological reflux after stomach operations. The frequency of stomach cancer could not be related to occupational exposure. Geographic pathology has shown that people coming from high risk areas (eg Japan) adapt to the risk pattern of the host country when they emigrate (eg to the United States, where there is only a low risk for stomach cancer). Therefore, it is assumed that several factors play a role in the etiology of stomach cancer. (Author abstract) (16 Refs) (In GER)

POTENTIAL CARCINOGENIC FACTORS RELATED TO MEDICAL TREATMENT

30. FORMALDEHYDE IN DENTISTRY: A REVIEW OF MUTAGENIC AND CARCINOGENIC POTENTIAL.

Lewis BB, Chestner SB
800-A Fifth Ave., Suite 503, New York, NY, 10021
J Am Dent Assoc; 103(3):429-434 1981

A review of the carcinogenic and mutagenic potential of formaldehyde products used in dentistry is presented. Dentists performing endodontic therapy may use formocresol and formaldehyde paste. Tissue contact results either directly or by contact with the gaseous formaldehyde phase. While various short-term tests have indicated the mutagenicity of formaldehyde, they are not conclusive for the mammalian species. Clinical studies involving chronic topical application of formalin have demonstrated the induction of leukoplakia and lesions resembling carcinoma in situ. The respiratory tract may be the area for the greatest risk of the development of tumors. Animal studies demonstrate that formaldehyde may affect reproduction potential. Formaldehyde should be considered a potential carcinogen in humans. Formaldehyde poses problems to systemic health via ingestion routes, interaction in air with other aldehydes, and in final breakdown products of formalin in the body. If formaldehyde is clearly not necessary, why is it used at all, particularly in light of its deleterious effects. (115 Refs)

31. ORAL CONTRACEPTIVES AND RISK OF OVARIAN CANCER.

Willett WC, Bain C, Hennekens CH, Rosner B, Speizer FK
Channing Lab., Harvard Medical Sch., 180 Longwood Ave., Boston, MA, 02115
Cancer; 48(7):1684-1687 1981

Among a large cohort of married, female, registered nurses under 55 yr of age, oral contraceptive (OC) use was examined in women with ovarian cancer and 470 age-matched controls. Use of OCs before the diagnosis of cancer was reported by 28% of the women with ovarian cancer and 33% of the controls, yielding a relative risk of 0.8 (95% confidence limits 0.4-1.5). This apparent inverse relationship was attributable to a large effect in women 35 yr of age or younger (relative risk = 0.2, 95% confidence limits 0.1 -1.0). Patients with ovarian cancer were 2.2 times more likely than controls to be nulliparous. These data provide reassurance that OC use is not likely to be associated with any major increase in risk of ovarian cancer, but suggest that future studies of this relationship need to consider the possible confounding effect of infertility. (Author abstract) (12 Refs)

32. A PROSPECTIVE COHORT STUDY OF ORAL CONTRACEPTIVES AND BREAST CANCER.

Trapido EJ
Dept. Epidemiology, Harvard Sch. Public Health, 677 Huntington Ave., Boston, MA, 02115
JNCI; 67(5):1011-1015 1981

In 1970 a questionnaire was sent to 97,300 married women aged 25-50 yr residing in eastern Massachusetts. Information was requested on use of oral contraceptives (OC), education, and gynecologic and reproductive histories. Subsequent questionnaires were sent in 1973 and 1979 to a subset of the original cohort (37,000) to obtain recent information. Surveillance of 34 hospitals disclosed 622 cases of breast cancer among respondents diagnosed in a 6-1/2 yr period. The rate ratio of breast cancer associated with any use of OC was 0.84 (95% confidence limits: 0.7, 1.1). Although certain subgroups of users experienced significantly lower rates of hospitalization for breast cancer than did nonusers (including users aged 25-29, those for whom less than or equal to 5 yr had passed since first use, women with ages at birth of first child either before 25 or after 30, and women who first used OC after the birth of the first child), the risk of breast cancer was not consistently lower among users of OC. Among nulliparous women, the rate ratio associated with use of OC was 2.1 (0.9, 5.0). (Author abstract) (20 Refs)

33. NEOPLASIA AND HORMONAL CONTRACEPTION.

Huggins GR
Univ. Pennsylvania Sch. Medicine, Philadelphia, PA, 19104
Clin Obstet Gynecol; 24(3):903-925 1981

The relationships between use of oral contraceptives and neoplasia are reviewed. Problems of investigation include lack of suitable animal models, lag time following exposure to carcinogens before development of overt malignancy, low incidence of malignancies in young women, and the wide range of factors influencing neoplasia. Investigative methods include case reports, disease rates and trends, case comparisons, and cohort studies. Breast disease is discussed with respect to the preclinical phase of breast cancer, breast cancer and chronic mastitis, the estradiol hypothesis, and the relationships between oral contraceptive use and benign and malignant breast disease. The relationships of oral contraceptives to liver tumors, pituitary tumors, endometrial hyperplasia, cervical neoplasia, ovarian disease, and choriocarcinoma are evaluated based on current published data. (56 Refs)

34. WORKSHOP I: CURRENT AND FUTURE HORMONE SUPPLEMENT THERAPY. 6. ESTROGEN SUPPLEMEN T THERAPY DURING THE MENOPAUSAL PERIOD.

Aono T, Minamikawa J
Dept. Obstetrics and Gynecology, Osaka Univ. Sch. Medicine, Osaka, Japan
Nippon Naibunpi Gakkai Zasshi; 57(3):337-340 1981

In conjunction with a discussion on selecting appropriate candidates for estrogen supplemental therapy and constructing a treatment schedule, the use of estrogen therapy by Japanese women and results of a survey on its relationship to occurrence of uterine endometrial cancer are reported. The proportion of endometrial cancer incidence to cervical cancer incidence among women in America and Europe is thought to be about 1:1, while that in Japan is thought to be about 1:10. A matched pair analysis of 72 women who had uterine endometrial cancer and 72 women who did not have cancer (controls) revealed 19 matched pairs cross-categorized as estrogen-using cancer patients and estrogen-nonuser controls, and 8 pairs matching non-estrogen using cancer patients and estrogen-using controls. Thus, the relative risk of women who use estrogen of having uterine endometrial cancer was 19/8 (2.38). Because patients who used gestagen with the estrogen had a lower relative risk of having uterine endometrial cancer than those who were administered estrogen alone, this combination is recommended. Short term + least necessary dose treatment with estrogen, combining estrogen and gestagen, and careful monitoring of women who use estrogen for 1-2-yr intervals are recommended. (4 Refs) (In JPN)

35. CARCINOGENICITY OF HYDANTOINS: DATA, HYPOTHESES, AND PUBLIC REVIEWS.

Scoville B, White BG
Natl. Inst. Neurological and Communicative Disorders and Stroke, NIH, Bethesda, MD, 20205
Psychopharmacol Bull; 17(3):195-197 1981

The Epilepsy Branch of NIH undertook an independent literature review of 353 studies of phenytoin (PT) because the International Agency for Research on Cancer had initially classified it as a carcinogen in 1977 but reversed its position in 1978. Five types of lymph node changes have been reported to be associated with PT use: acute benign enlargements, subacute reactions (to which the term pseudolymphoma has been applied), lymphoma (79 cases; the causal relationship to PT was not clear), pseudopseudolymphoma, and immunoblastic or angioimmunoblastic lymphadenopathy. There have been four case reports of neuroblastoma in very young children born to mothers who had taken PT during pregnancy (3 fetal hydantoin syndrome and 1 cleft palate). Among 11 epidemiological studies, 4 case-control studies were positive while 7 cohort studies were negative. The risk of lymphoma from antiepileptic drugs may be 10 x that in the general population but not higher than 1/1,000. Two positive animal toxicity studies exist: one showed a decreased latency of reticulum cell sarcomas in SJF/J mice treated with PT for greater than 1 yr, and the other revealed a 25% i ncidence of lymphosarcoma, reticulosarcoma, or leukemia, in PT-treated mice compared with 5% in controls. PT impairs the immune system and may act as an antigenic stimulus; both of these effects may contribute to its possible carcinogenicity. Experts at NIH and at the Food and Drug Administration find that the data on PT are inconclusive. (13 Refs)

ANALYTICAL AND METHODOLOGICAL ASPECTS OF CANCER EPIDEMIOLOGY

36. DIAGNOSTIC SENSITIVITY BIAS - AN EPIDEMIOLOGIC EXPLANATION FOR AN APPARENT BRAIN TUMOR EXCESS.

Greenwald P, Friedlander BR, Lawrence CE, Hearne T, Earle K
Div. Epidemiology, New York State Dept. Health, Tower Building, Room 503, Governor Nelson A. Rockefeller Empire State Plaza, Albany, NY, 12237
JOM; 23(10):690-694 1981

Preliminary data showing over-representation of the Eastman Kodak Company (Rochester) on death certificates of brain tumor patients, and higher risk for older workers when compared to the general population, led to a case-control epidemiologic study. Chemical exposure histories of 56 workers with brain tumors were compared with those of other Kodak employees. No differences were found in exposure to a variety of chemicals. In addition, employees with brain tumors were compared to other upstate New York brain tumor patients; there was no difference in histology. However, the Kodak employees had diagnoses more frequently confirmed by histologic examination and more thorough diagnostic studies. Thus, the apparent initial excess of diagnosed tumors may have resulted from a 'diagnostic sensitivity bias' arising from more complete medical evaluation of Kodak employees. (Author abstract) (17 Refs)

GENERAL AND MISCELLANEOUS FACTORS

37. CHEMICAL COMPOUNDS AND CANCER RISK.

Schramm T, Janisch W
Zentralinstitut fur Krebsforschung der Akademie der Wissenschaften der DDR, Lindenberger Weg 80, DDR-1115 Berlin, E. Germany
Arch Geschwulstforsch; 51(7):561-565 1981

Recent research on the cancer risk of chemical compounds is reviewed. Cancer risk is strongly influenced by environmental factors, which is evidenced by the great stability of so-called cancer patterns within certain populations, by greatly stable differences between the cancer patterns of differents populations, and by changes in the cancer pattern within immigrant and emigrant populations. It has not yet been possible to establish causal relationships with exactly definable risk factors for about half of all neoplasms in men and about 3/4 of all neoplasms in women. It is unjustified scientifically to distinguish between animal and human carcinogens. Chemical substances found to be carcinogenic in animal experiments should be considered as potential carcinogens in humans as well. Dose-effect relationships have been proved for chemical carcinogens but the existence of threshold doses has not yet been elucidated. Short-term scr eening tests are of great value in the detection of carcinogenic effects of chemical substances, even though they are unable to replace long-term animal experiments and epidemiological surveys. (22 Refs) (In GER)

38. INTRODUCTION, GENERAL FINDINGS AND GENERAL RECOMMENDATIONS (WORKSHOP ON METAL CARCINOGENICITY).

Friberg L, Nelson N, Beaumont J, Fowler BA, Lauwerys R, Nordberg G, Vostal J, Zielhuis R
Karolinska Inst., Stockholm, Sweden
Environ Health Perspect; 40:5-10 1981

Recommendations are made for evaluating the carcinogenic risks of metal compounds through epidemiologic studies, animal experiments, and in vitro mutation tests systems. Specific recommendations cover monitoring programs in the work environment, development of standard analytical methods and reference materials, identification of groups susceptible to metal carcinogenesis, relationships between tissue concentrations and carcinogenic response, the physical state of metal carcinogens, metals as cocarcinogens, use of animals for predictive testing, and evaluation of negative epidemiologic studies. (21 Refs)

* U. S. GOVERNMENT PRINTING OFFICE : 1982—361-847/111

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NOTICE OF CURRENT REVIEWS: CARCINOGENESIS

As an additional service to readers of carcinogenesis (CK series) CANCERGRAMS, each issue now provides a bibliography of review articles of interest to carcinogenesis researchers, selected from journals screened for that month's CANCERGRAMS.

CHEMICAL CARCINOGENESIS

1. CHEMICAL COMPOUNDS AND CANCER RISK.

Schramm T, Janisch W
Zentralinstitut fur Krebsforschung der Akademie der Wissenschaften der DDR, Lindenberger Weg 80, DDR-1115 Berlin, E. Germany
Arch Geschwulstforsch; 51(7):561-565 1981
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2. THE CARCINOGENICITY OF ARSENIC.

Pershagen G
Dept. Environmental Hygeine, Karolinska Inst., Stockholm, Sweden
Environ Health Perspect; 40:93-100 1981

3. THE CARCINOGENICITY OF CHROMIUM.

Norseth T
Inst. Occupational Health, Gydas vei 8, Oslo 3, Norway
Environ Health Perspect; 40:121-130 1981

4. ROLE OF COBALT, IRON, LEAD, MANGANESE, MERCURY, PLATINUM, SELENIUM, AND TITANIUM IN CARCINOGENESIS.

Kazantzis G
TUC Centenary Inst. Occupational Health, London Sch. Hygiene and Tropical Medicine, Keppel St., London WC1E 7HT, England
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Dept. Lab. Medicine, Univ. Connecticut Sch. Medicine, Farmington, CT, 06032
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Dept. Environmental Hygiene, Karolinska Inst., S-104 01 Stockholm, Sweden
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Dept. Chemistry, Univ. Maryland Baltimore County, Catonsville, MD, 21228
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800-A Fifth Ave., Suite 503, New York, NY, 10021
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Edling C
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Dept. Nutrition and Food Science, Massachusetts Inst. Technology, Cambridge, MA, 02139
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Cancer Res. Dept., Natl. Cancer Assoc. South Africa, P.O. Box 2000, Johannesburg 2000, South Africa
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Li JY, Liu BQ, Li GY, Chen ZJ, Sun XD, Rong SD
Dept. Cancer Epidemiology, Cancer Inst. Chinese Acad. Medical Sciences, 2, Yabao Lu, Chaoyang, Qu, Beijing, People's Republic of China
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(c/o P. Lohman), Medical Biological Lab. TNO., P.O. Box 45, 2280 AA Rijswijk, The Netherlands
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Jennette KW
Dept. Chemistry, Dartmouth Coll., Hanover, NH, 03755
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M. D. Anderson Hosp. and Tumor Inst., 6723 Bertner Ave., Houston, TX, 77030
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Harvey RG
Ben May Lab., Univ. Chicago, Chicago, IL, 60637
Acc Chem Res; 14(7):218-226 1981

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Squibb KS, Fowler BA
Lab. Pharmacology, Natl. Inst. Environmental Health Sciences, P.O. Box 12233, Research Triangle Park, NC, 27709
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Grossman L
Dept. Biochemistry, Sch. Hygiene and Public Health, Johns Hopkins Univ., 615 N. Wolfe St., Baltimore, MD, 21205
Arch Biochem Biophys; 211(2):511-522 1981

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Zakour RA, Kunkel TA, Loeb LA
Joseph Gottstein Memorial Cancer Res. Lab., Dept. Pathol., Univ. Washington, Seattle, WA, 98195
Environ Health Perspect; 40:197-205 1981

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Vainio H, Sorsa M
Dept. Industrial Hygiene and Toxicology, Inst. Occupational Health, Haartmaninkatu 1, SF-00290 Helsinki 29, Finland
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Nordberg GF, Andersen O
Dept. Environmental Hygiene, Umea Univ., Umea, Sweden
Environ Health Perspect; 40:65-81 1981

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Rossman TG
Inst. Environmental Medicine, New York Univ. Sch. Medicine, 550 First Ave., New York, NY, 10016
Environ Health Perspect; 40:189-195 1981

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Latt SA, Allen J, Bloom SE, Carrano A, Falke E, Kram D, Schneider E, Schreck R, Tice R, Whitfield B, Wolff S
Harvard Medical Sch., Boston, MA, 02115
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Sirover MA
Dept. Pharmacology, Temple Univ. Sch. Medicine, Philadelphia, PA, 19140
Environ Health Perspect; 40:163-172 1981

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ENVIRONMENTAL AND OCCUPATIONAL CARCINOGENESIS

SERIES CK02 No. 82/03

MARCH, 1982

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ENVIRONMENTAL FACTORS: POLLUTION

1. NUTRITION AND ENVIRONMENTAL HEALTH: THE INFLUENCE OF NUTRITIONAL STATUS ON POLLUTANT TOXICITY AND CARCINOGENICITY. VOLUME 2: MINERALS AND MACRONUTRIENTS.

Calabrese EJ
Environmental Health Program, Div. Public Health, Univ. Massachusetts, Amherst, MA
Nutrition and Environmental Health: The Influence of Nutritional Status on Pollu tant Toxicity and Carcinogenicity. Volume 2: Minerals and Macronutrients. New York, John Wiley and Sons, 468 pp., 1981.

As part of a survey on the influence of nutritional status on pollutant toxicity and/or carcinogenicity, the roles of minerals (calcium, copper, iron, selenium, zinc, cobalt, iodine, magnesium, manganese, molybdenum, phosphorus, potassium, and sulfur), protein, fats, carbohydrates, specific amino acids, fiber, and synthetic antioxidants are detailed. A comprehensive, critical review of the literature and viable and socially relevant research hypotheses to be considered in the formulation of priority allocations are presented. Persons who may be at increased risk for development of adverse effects from pollutant exposures are indicated. (2115 Refs)

2. THE RELATIONSHIP OF AIR POLLUTION TO LUNG CANCER IN CONTRA COSTA COUNTY (MEETING ABSTRACT).

Austin DF
Resource for Cancer Epidemiology Section, California Department of, Health Services Oakland, CA
Second Annual NCI/EPA/NIOSH Collaborative Workshop: Progress on Joint Environmental and Occupational Cancer Studies, September 9-11, 1981, Rockville, Maryland. National Cancer Institute 33 pp., 1981.

Contra Costa County, a nearly 2000 km2 area in the northeastern part of the San Francisco Bay Area, has a population of more than 600,000. It was one of 39 counties in the US which has been shown to have high mortality rates for specific cancer sites. The northern section of the county is heavily industrialized with five major petroleum refineries and many chemical plants. This project was designed to examine the relationship between air pollution in Contra Costa County and the incidence of cancer. Contra Costa County cancer incidence data for the period 1969-78 were available through the RCE's population-based registry, now a part of the NCI's SEER Program. Particulate air pollutants were collected and analyzed under an Environmental Protection Agency (EPA) grant. Hivol glass filters were collected every sixth day for one yr, from November, 1978, through October, 1979, at each of fifteen sampling stations. Particulate matter was analyzed for total suspended particulates (TSP), benzene-soluble organics (BSO), sulfates (S0(4)), nitrates (N0(3)), lead (Pb), selected polycyclic aromatic hydrocarbons (benzo(a)pyrene, benzo(ghi)perlene, benzo(a)anthracene, chrysene and for some samples, coronene), and mutagenicity using the Ames test. Estimates of the av annual level of each of the measured pollutants are computed for the population centroids of each of the 115 census tracts in the county. The industrialized portion of the county was found to have an age-adjusted incidence rate of lung cancer which has increased over the 10 yr of study from about a 10% excess to about a 60% excess as compared to the non-industrial portion. The corr elation of each air pollutant and of several combinations of the pollutants with lung cancer incidence is under examination. In addition, a case-control interview study of lung cancer, using population-based controls, is underway. Major factors under examination are smoking, occupation, diet and alcohol, air pollution and proximity to one of the 18 toxic waste dump sites, found only in the industrial portion of the county. (no Refs)

3. VOLCANOES AND CARCINOMA OF THE THYROID: A POSSIBLE ASSOCIATION.

Kung TM, Ng WL, Gibson JB
(c/o Ng) Dept. Pathology, Univ. Hong Kong, Queen Mary Hosp., Hong Kong, Hong Kong
Arch Environ Health; 36(5):265-267 1981

Environmental factors contributing to incidences of thyroid carcinoma are re-evaluated and emphasized in this study. Thyroid cancers appear to occur independent of endemic goiter, based on epidemiologic and histologic evidence. While environmental factors appear to be important, the specific etiologic agent has not yet been identified or suggested. The number of thyroid cancer incidences available from cancer registries are analyzed in an attempt to identify a specific environmental carcinogenic agent. The presence of active volcanoes that produce abundant lava is found to be the common denominator of Iceland and Hawaii, where the incidence of thyroid cancer is outstandingly high. Comparison with other areas with active volcanoes is made. The presence of a carcinogenic agent in the lava is postulated and its possible mode of action on humans through fish products is hypothesized. (Author abstract) (18 Refs)

4. CANCER AND THE PHYSICOCHEMICAL QUALITY OF DRINKING WATER IN QUEBEC.

Thouez JP, Beauchamp Y, Simard A
Dept. Geography, Univ. Montreal, Montreal, Quebec, Canada
Soc Sci Med [Med Geogr]; 15(1):213-223 1981

Epidemiologic studies of the carcinogenicity of drinking water are reviewed, and results of an investigation of the relationship between the quality of drinking water and cancer in Quebec are presented. Standardized incidence ratios (SIRs) for gastrointestinal, urogenital and other neoplasms (1971-1975) were calculated for 46 Quebec census regions in which at least 50% of the population was supplied with drinking water from the St Lawrence river. Regions with high and low SIRs were compared according to the physicochemical characteristics of the drinking water. Correlation and regression analysis revealed a significant positive association between 'soft' water and the incidence of cancer of prostate, rectum, and digestive system organs. 'Hard' water was negatively associated with the incidence of stomach, prostate, and rectal cancer. (46 Refs)

5. THE CURRENT USE OF STUDIES ON PROMOTERS AND COCARCINOGENS IN QUANTITATIVE RISK ASSESSMENT (MEETING ABSTRACT).

Stara JF
U.S. Environmental Protection Agency, Cincinnati, OH
International Symposium on Health Effects of Tumor Promotion, October 12-15, 1981, Cincinnati, Ohio US Environmental Protection Agency and the American College of Toxicology; 1981

Under the Clean Water Act, the US Environmental Protection Agency is required to develop an approach for controlling the release of hazardous pollutants in water. As part of this effort, the Environmental Criteria and Assessment Office (ECAO) in Cincinnati, with the support of other groups in the Office of Health and Environmental Assessment (OHEA), was assigned the task of assessing the potential health risks associat-

ed with contamination of the aquatic environment. Initially, ECAO's major responsibility was to prepare the Human Health Effects Assessment Chapters of the 65 Ambient Water Quality Criteria Documents (AWQCDs) which were required under the Consent Decree of Environmental Defense Fund vs Train. Along with scientists from other Agency offices, academia, and private sector, ECAO developed guidelines for deriving ambient water quality criteria and applied these guidelines to the available data on the 129 compounds included in the 65 documents. Several of the pollutants covered in these documents have been shown to be promoters or cocarcinogens. For example, phenol appears to have tumor promoting activity in mice when repeatedly applied after initiation with either dimethylbenzanthracene (DMBA) or benzo(a)pyrene (BaP). Similarly, it has recently been reported that 2,3,7,8-tetrachlorodibenzo-p-dioxin (TCDD) is a potent liver promoter and a cocarcinogen. However, it became apparent that satisfactory methods had not yet been developed for using promotion/cocarcinogenicity data in quantitative risk assessment. For this reason, the derived criteria for some pollutants with promotion/cocarcinogenic activities were based on carcinogenicity, toxicity, and organoleptic effects. (no Refs)

ENVIRONMENTAL AND OCCUPATIONAL FACTORS: RADIATION

6. THE RISKS OF PHOTOCHEMOTHERAPY.

Stuttgen G, Kentsch V, Schalla W, Schneider L
Hautklinik und -Poliklinik, Freie Universitat Berlin in Rudolf-Virchow-Krankenhaus, Augustenburger Platz 1, 1000 Berlin 65, W. Germany
Z Hautkr; 56(21):1379-1382,1385-1386,1389-1392,1395-1396,1399 1981

The short-term and long-term side-effects photochemotherapy with 8-methoxypsoralen and UV rays (PUVA therapy) were studied in 2,013 patients. The cumulative radiation dose applied was 250-3,800 Joules/square cm. Four malignant tumors were found in three patients treated for 5 yr: basaloma was found in two patients, carcinoma in one. There was no significant difference in the tumor incidence and the incidence of spontaneous tumors. It is possible that PUVA therapy suppresses the development of spontaneous tumors and has carcinogenic effect based on anotner mechanism. Two patients with tumors of the uterine cervix, one with colon tumor, three with breast carcinoma, two with lung carcinoma, and one with laryngeal carcinoma were subjected to PUVA therapy for psoriasis. After an irradiation time of 3 yr, no skin tumors were found in these patients. (35 Refs) (In GER)

7. HABITS OF SUN EXPOSURE AND RISK OF MALIGNANT MELANOMA: AN ANALYSIS OF INCIDENCE RATES IN NORWAY 1955-1977 BY COHORT, SEX, AGE, AND PRIMARY TUMOR SITE.

Magnus K
Cancer Registry Norway, Montebello, Oslo 3, Norway
Cancer; 48(10):2329-2335 1981

Incidence data on malignant melanoma of the skin in Norway from 1955-1977, comprising a total of 5,108 new cases, were analyzed according to cohort, sex, age, and primary tumor site. A continuous increase in incidence of approx 7% per yr was observed for both sexes during the study period. For trunk and lower limb melanomas, the increase and cohort variations in incidence were much greater than for face and neck melanoma. A difference between these site groups was also observed in the shape of the cohort curves of age-specific rates. This indicated that the trend in carcinogenic exposure through life was different for the face-neck and the trunk-lower limb. For the generations born 1930-1949, the incidence of malignant melanoma per area unit of skin was greater for the trunk and lower limb than for the face-neck. It is suggested that not only the cumulated dose, but also the intensity of solar radiation may be significant in the cause of malignant melanoma. (Author abstract) (9 Refs)

OCCUPATIONAL FACTORS: SPECIFIC AGENTS OR INDUSTRIES

8. LUNG CANCER IN MEMBERS OF THE OCCUPATIONAL GROUP 'METAL MINING AND MANUFACTURING'.

Vutuc C, Kunze M
Abteilung Sozialmedizin, Hygiene-Institut der Universitat Wien, Kinderspitalgasse 15, A-1095 Wien, Austria
Oeff Gesundheitswes; 43(10):511-516 1981

Lung cancer risk and smoking habits among 1,530 patients with confirmed bronchial carcinoma were compared with those among 3,160 controls. Data were collected for the period 1977-79. Patients from the labor category 'metal mining and manufacturing' were compared with patients from the category 'white-collar' workers. Lung cancers were classified according to Kreyberg as Class I or Class II. Metal workers with bronchial carcinoma were more often smokers (97%) than were controls (78%). Patients had smoked longer (av 41.6 yr) than controls (av 36.1 yr). Tar exposures were higher among lung cancer patients (2418 units) than among controls (2108 units). Cancer risk was 8x as high among cigarette smokers as among those who had never smoked. Metal workers who smoked had a higher risk of cancer than white-collar workers who smoked. Differences in risk by occupational group could not be calculated for nonsmokers because of an insufficient number of nonsmokers with bronchial carcinoma. (14 Refs) (In GER)

9. RESPIRATORY CANCER AMONG COPPER SMELTER WORKERS: RECENT MORTALITY STATISTICS.

Lubin JH, Pottern LM, Blot WJ, Tokudome S, Stone BJ, Fraumeni JF
Environmental Epidemiology Branch, NCI, 3C07 Landow Building, Bethesda, MD, 20205
JOM; 23(11):779-784 1981

A survey of mortality among copper smelter workers in the western United States revealed that a respiratory cancer excess previously observed during the period 1938 through 1963 continued from 1964 through 1977. When analyzed in relation to smelter employment prior to 1964, the recent increase in respiratory cancer was linked to work in plant areas where airborne arsenic concentrations were elevated and to a cumulative arsenic exposure index, although some excess risk was also associated with long-term employment in jobs with limited exposures to arsenic. The arsenic-related excess remained after adjustment for work in areas of the plant with elevated concentrations of sulfur dioxide, which was not found to have an independent influence upon cancer risk. Increased rates for nonmalignant respiratory disease were also observed, but were not

significantly associated with arsenic exposure. (Author abstract) (21 Refs)

10. MORTALITY AMONG WELDERS, INCLUDING A GROUP EXPOSED TO NICKEL OXIDES.

Polednak AP
Cancer Control Bureau, Div. Epidemiology, New York State Dept. Health, Tower Bldg., Rm. 565, Albany, NY, 12237
Arch Environ Health; 36(5):235-242 1981

Mortality and causes of death were examined among 1,059 white male welders employed between 1943 and 1973 at three plants in Oak Ridge, Tennessee. Based on deaths reported as of 1974, the standardized mortality ratio (SMR) for all causes was 87 (173 deaths observed vs 199.0 expected on the basis of death rates for US white males). There were no deaths resulting from sinonasal cancer, and the SMR for lung cancer was 150 (95% confidence limits = 97 and 240). A subgroup of these welders (N = 536) was exposed to nickel oxides at the Oak Ridge Gaseous Diffusion (K-25) Plant; recent air concentrations of nickel (from personal air samplers) were greater than proposed standards. Standardized mortality ratios for lung cancer and diseases of the respiratory system were not higher among K-25 Plant welders than among other welders (N = 523). Welders employed for greater than or equal to 50 wk at the K-25 Plant had an SMR for lung cancer of 188 (95% confidence limits = 61 and 438) based on small numbers of deaths (5 observed vs 2.66 expected). Further follow-up of these groups is needed. (Author abstract) (34 Refs)

11. MORTALITY AMONG ETHYLENE OXIDE WORKERS.

Morgan RW, Claxton KW, Divine BJ, Kaplan SD, Harris VB
Environmental Health Assoc. Inc., 2150 Shattuck Ave., Suite 414, Berkeley, CA, 94704
JOM; 23(11):767-770 1981

Because of reports linking an increased risk of leukemia with exposure to ethyle ne oxide, a mortality study of workers with potential exposure to ethylene oxide at the Texaco Chemical Company Plant in Port Neches, Texas, was undertaken. A total of 767 males with potential exposure to ethylene oxide were identified. Forty-six deaths occurred in this cohort with 80 expected [standardized mortality ratio; SMR = 58]. No deaths from leukemia were seen, nor were there any statistically significant excesses from any specific causes of death. (Author abstract) (14 Refs)

12. MORTALITY AND INDUSTRIAL HYGIENE STUDY OF WORKERS EXPOSED TO STYRENE (MEETING ABSTRACT).

Beaumont JJ, Meinhardt TJ, Okun AH, Crandall MS
National Institute for Occupational Safety and Health, Cincinnati, Ohio
Second Annual NCI/EPA/NIOSH Collaborative Workshop: Progress on Joint Environmental and Occupational Cancer Studies, September 9-11, 1981, Rockville, Maryland. National Cancer Institute 33 pp., 1981.

Recent research indicates that workers exposed to styrene may experience chronic health problems: 1) Studies have shown an increase of deaths due to leukemia among styrene-butadiene rubber workers; 2) Styrene has been shown to be mutagenic after liver microsomal activation; 3) Styrene oxide, a metabolite of styrene, has been shown to be mutagenic by the Ames test. Hepatotoxicity and carcinogenicity have been attributed to chronic exposure to styrene metabolites based on animal experiments. To further evaluate the effects of styrene exposure on humans, a retrospective cohort mortality and industrial hygiene study is being conducted. Employees from two boat manufacturing companies in Washington State were selected for study. Styrene exposure started at both facilities in 1957 and a total of 5,359 employees had worked at these plants by the time of the data collection. The personnel records for both companies were microfilmed in October of 1978, and industrial hygiene surveys were conducted during June and August of that yr. The vital status is being ascertained for each worker and death certificates are being sought for those individuals found to be deceased. To verify the completeness of the cohort, the names of all cohort members were matched against the Internal Revenue Service quarterly earnings reports. The cohort will be analyzed by a modified life table where expected numbers of deaths will be calculated based upon United States death rates, adjusted for race, sex, age, and calendar time. Various exposure groups, based upon the industrial hygiene surveys, will also be analyzed separately. (no Refs)

13. BENZENE INDUCED BONE-MARROW INSUFFICIENCY.

Haak HL
Dept. Hematology, Municipal Hosp. 'Leyenburg', Leyweg 275, 2545 CH The Hague, The Netherlands
Trends Pharmacol Sci; 2(10):265-267 1981

History, clinical and experimental findings, and cytogenetic effects of benzene are discussed in relation to benzene-induced bone marrow insufficiency. A high level of benzene exposure has been associated with high incidence of pancytopenias and bone marrow dysplasia. A small number of these cases may develop into leukemia, usually of the acute myelogenous variety. The overall incidence of malignant disease in highly exposed individuals is approx double that of the general population. The risk of lower levels of exposure is a matter of epidemiological debate. Experimental studies indicate that benzene induces hematopoietic failure at the level of the maturing progenitor cell, beyond the pluripotent stem cells. Such failure is expressed by progressive dysplastic changes in bone marrow and peripheral blood. In addition, several lines of investigation have indicated a deranged interaction between stem cells, progenitor cells, and the regulating microenvironment. Unlike the situation in humans, no malignancy has been induced by benzene in vivo in animals. Perhaps in humans additional toxicity is afflicted on the hematopoietic stem cell. (10 Refs)

14. MORTALITY STUDY OF THE PRINTING TRADES (MEETING ABSTRACT).

Stern FB, Nicholson WJ
National Institute for Occupational Safety and Health, Cincinnati, OH
Second Annual NCI/EPA/NIOSH Collaborative Workshop: Progress on Joint Environmental and Occupational Cancer Studies, September 9-11, 1981, Rockville, Maryland. National Cancer Institute 33 pp., 1981.

This cohort mortality study was based on all of the 1,769 active, pension or beneficiary journeymen members on the rolls of Local 2 of the International Printing Pressmen and Assistants Union (IPPAU), New York City, as of January 1, 1950. The vital status as of December 31, 1976 was determined for 98.6% of the cohort; 513 (29.0%) were ascertained to be alive, 1,232 (69.6%) were ascertained to be deceased, the remaining 24 (1.4%) were lost to follow-up. Cause of death information was available for all but 11 (0.9%) deaths. The causes were coded according to the classification of deaths in effect at the time of death. The expected numbers of cause-specific deaths

were calculated using age- and calendar yr-specific mortality rates of New York City (NYC) and US white males. A significant excess of total mortality over that of expected, either by NYC or US rates, was observed. The important causes of cancer mortality contributing to this excess based on NYC rates were cancer of the buccal cavity and pharynx, prostatic cancer and lung cancer. Based on US rates, the important causes of cancer mortality contributing to the overall excess mortality were cancer of the buccal cavity and pharynx, bladder cancer, all other cancer and lung cancer. An adjustment for possible excessive smoking habits of the cohort did not eliminate the entire mortality excess from lung cancer, cancer of the buccal cavity and pharynx, and prostatic cancer. (no Refs)

15. CANCER IN FURNITURE WORKERS.

Rang EH, Acheson E
Dept. Surgery, St. George's Hosp. Medical Sch., Cranmer Terrace, London, SW17 ORE, England
Int J Epidemiol; 10(3):253-261 1981

A follow-up study of 5,371 men who had worked in one or more of nine furniture factories in Buckinghamshire for an av of 19 yr up to 1968 is reported. The incidence of nasal adenocarcinoma in furniture workers taken as a whole was found to be about 100x that expected in the local population, and a significant relationship was found between increasing incidence of the tumor and increasing dustiness of work within the cohort. Similar comparisons with the local population produced no evidence for an increased risk of cancer of any other site in the furniture workers including bronchial cancer and malignant disease of the reticuloendothelial system. However, when comparisons were made between men exposed to different amounts of dust within the industry, the incidence and mortality of bronchial cancer increased with increasing dustiness of work, the latter trend, but not the former, being statistically significant. This trend is not due to differences in smoking habits among the groups of men. No trends of increasing incidence or mortality of other sites of cancer with increasing dustiness of work were found. (Author abstract) (18 Refs)

16. MORTALITY STUDY OF WORKERS IN THE PLYWOOD, PAPER AND PULP INDUSTRIES (MEETING ABSTRACT).

Robinson CF
No affiliation given
Second Annual NCI/EPA/NIOSH Collaborative Workshop: Progress on Joint Environmental and Occupational Cancer Studies, September 9-11, 1981, Rockville, Maryland. National Cancer Institute 33 pp., 1981.

A 1976 National Institute for Occupational Safety and Health (NIOSH)-sponsored proportionate mortality ratio (PMR) study of 20 yr of death certificates (1950-1971) from Washington State showed that men working in the plywood, paper and pulp industry were at increased proportionate risk of cancers of the lymphatic system and/or blood-forming organs. To further investigate these findings, a retrospective cohort mortality study of men employed in these industries is being conducted. A contract for this work was let to Stanford Research International (SRI). SRI and NIOSH jointly selected four plywood mills and five paper and pulp mills for study on the basis of the type of process used by the mill, the age of the mill, the suitability of plant personnel records, and how far back in time the personnel records of terminated employees were retained. To insure sufficient latency, the study cohort definition included all male workers who had worked a minimum of 1 yr between 1945 and 1955. Plant personnel records were microfilmed and the demographic information and the detailed work histories were coded for data analysis by SRI. A cohort of about 6 ,000 workers was identified from the mill personnel records. Concurrently, a historical environmental summary of exposures was prepared. Follow-up for vital status of the workers and collection of the death certificates is being conducted by NIOSH, as well as the editing and verification of the cohort identified. Once the edits have been completed and an acceptable percentage of death certificates has been obtained, analyses will be conducted on the data using the NIOSH life table program. The pattern of observed deaths among the plywood, paper and pulp mill workers will be compared to that expected on the basis of sex, age, race, calendar time and cause-specific death rates. (no Refs)

17. EPIDEMIOLOGY AND CLINICAL ASPECTS OF PLEURAL AND PERITONEAL MESOTHELIOMA IN WORKERS EXPOSED TO ASBESTOS.

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Institut hygieny a epidemiologie, Vysehradska 49, 128 21 Prague 2, Czechoslovakia
Stud Pneumol Phtiseol Cech; 41(6):404-410 1981

Mesothelioma was diagnosed in seven patients (6 men and 1 women) during the period 1970-1980. Pleural mesothelioma was found in six cases, and peritoneal mesothelioma in one. All patients were active or retired employees of two asbestos processing plants. The age at death was 62.9 yr (49-78 yr old), and the length of exposure av 23.7 yr (15-38 yr old). The latent period from the beginning of exposure to the onset of the first av 32.3 yr (19-45 yr old). The survival from the onset of the first symptoms av 1.43 yr (1-3 yr old). The length of exposure of the patients with asbestosis was 23.7 yr (15-34 yr old), and the latent period from the beginning of the exposure to the diagnosis of asbestosis was 27.7 yr (21-34 yr old). The clinical picture showed an absolute predominance of the diffuse form with exudation, though there was one case of slow-growing localized fibromesothelioma. The incidence of mesothelioma is estimated at 0.5% among workers who had been exposed to asbestos for more than 20 yr. (21 Refs) (In CZE)

OCCUPATIONAL FACTORS: GENERAL

18. LUNG CANCER.

Woll JE
Univ. Rochester Sch. Medicine and Dentistry, Rochester, NY
Practical Cancer Chemotherapy. Rosenthal SN, and Bennett JM, ed. Garden City, NY, Medical Examination Publishing Co., 461 pp., 1981.

In America lung cancer accounts for 22% of all cancers in males, 8% in females. Median survival from diagnosis remains less than 6 mo, with an overall 5-yr-survival rate of 8%. Cigarette smoking, occupational exposure to lung irritants, and demographic variables all contribute to the etiology of lung cancer. A definite dose-response relationship exists between lung cancer risk and number of cigarettes smoked daily, with a 20-fold increase among those who smoke two or more packs a day. Lung malignancies can be produced in laboratory animals by application of tobacco tar and other carcinogens found in cigarette smoke. Occupational exposure to arsenic, asbestos, chromium, nickel, chloromethyl ethers, and radiation is also associated with an increased risk of lung cancer. The pathology, clinical features, diagnosis and evaluation, and treatment of the

various lung malignancies including non-small cell and small cell lung cancer are reviewed. (44 Refs)

19. MORTALITY STUDY OF CHEMICAL PLANTS IN THE KANAWHA VALLEY REGION OF WEST VIRGINIA (MEETING ABSTRACT).

Leet TL
No affiliation given
Second Annual NCI/EPA/NIOSH Collaborative Workshop: Progress on Joint Environmental and Occupational Cancer Studies, September 9-11, 1981, Rockville, Maryland. National Cancer Institute 33 pp., 1981.

The mortality experience of Union Carbide employees at three chemical plants in the Kanawha River Valley region of West Virginia will be evaluated in a study jointly conducted by the National Institute for Occupational Safety and Health (NIOSH) and the Union Carbide Corporation. These plants have produced many chemicals, including acrylonitrile, ethylene oxide, polycyclic aromatic hydrocarbons (PAH), vinyl resins, and pesticides. A company-sponsored proportionate mortality study based on 819 deaths known to Union Carbide found excess proportions of multiple myeloma and cancer of the kidney and CNS. Initial analyses will evaluate the validity of the apparent excesses as well as evaluate all other cause-specific mortality. Further analyses will test the epidemiologic association between 1) ethylene oxide exposure and leukemia and 2) PAH exposure in the coal hydrogenation process and cancer of the respiratory system, urogenital system, and skin. The study cohort includes approx 44,000 employees who were ever employed by Union Carbide in the Kanawha Valley between January 1, 1940 and December 31, 1978. Demographic and work history data have been coded, keypunched, and computerized for 10,000 active and 34,000 former employees. Vital status ascertainment has been initiated and death certificates are being collected for 6,800 (estimated) deceased employees. (no Refs)

EPIDEMIOLOGICAL FINDINGS INVOLVING SPECIFIC AREAS

20. MULTIPLE MYELOMA IN THE UNITED STATES, 1950-1975.

Blattner WA, Blair A, Mason TJ
Environmental Epidemiology Branch, NCI, Landow Building, Room 4C-18, Bethesda, MD, 20205
Cancer; 48(11):2547-2554 1981

A total of 68,400 whites and 10,533 nonwhites were reported to have died from multiple myeloma (MM) in the continental United States between 1950 and 1975 (excluding 1972 because of incomplete case ascertainment). Age-adjusted mortality rates for nonwhites were approx twice as high as for whites. During the 25-yr period of this survey, there was a twofold to threefold increase in MM mortality. The increase was seen in both races, but was greater in nonwhites than whites and primarily occurred in people over 55 yr of age. The increases were uniform in all geographic regions and urban/rural categories. MM mortality from 1950-1969 was correlated with geographic, demographic, and occupational factors at the county level. The rates were highest in the far west and mid-central regions for whites and in the northeast for nonwhites. Urban areas had the highest rates and rural areas had the lowest, and positive associations were seen with indices of socioeconomic level and the percentage of residents with Scandinavian ancestry. For white males, MM mortality rates were elevated in areas with high petroleum and paper production, and a slight increase was seen in furniture manufacturing areas. (Author abstract) (34 Refs)

21. CANCER AMONG THE FOREIGN-BORN IN NEW YORK STATE.

Nasca PC, Greenwald P, Burnett WS, Chorost S, Schmidt W
Bureau Cancer Control, New York State Dept. Health, Empire State Plaza, Albany, NY, 12237
Cancer; 48(10):2323-2328 1981

Cancer deaths among white, foreign-born residents of New York State (exclusive of New York City) during the yr 1969 through 1971 were analyzed according to country of birth. The largest numbers of immigrants came from Great Britain, Ireland, Germany, Austria, Poland, Italy, USSR, and Canada. Several distinctive features emerged from these data: Irish immigrants have an increased risk of dying from oropharyngeal, gastrointestinal, lung, and prostate cancers. Among all migrant groups studied, contrasting mortality patterns observed for carcinomas of the stomach, colon, and rectum provide further support for the concept that these neoplasms result from different etiologic processes. For the leukemias, lymphomas, and carcinomas of the breast and colon, each of the migrant groups acquired the higher risk common to others in the host country. This rise in risk suggests a major environmental component for cancers of these sites. (Author abstract) (15 Refs)

22. CANCER MORTALITY IN JEFFERSON COUNTY, KENTUCKY: 1968-1977; AN ANALYSIS OF CANCER MORTALITY IN SMALL GEOGRAPHICAL AREAS FOR TIME AND SPACE CLUSTERING.

Hathcock AL
University of Louisville, Louisville, KY, 40208
Diss Abstr Int [B]; 42(4):1407-B 1981

The research divided the study area (Jefferson County, Kentucky) into five homogeneous subareas and analyzed seven groups of cancers to determine if there were clusters of deaths in either space or time-space interactions. Standardized mortality ratios were calculated for each sex, race and type of cancer for each of the subareas and 95% significant factor limits established. Further analysis of the standardized mortality ratios was carried out using the Friedman rank sum test and a generalized test of homogeneity to test if the subareas were similiar to each other. Two subareas showed a consistent pattern or excess mortality and these areas are also the two lowest socioeconomic areas of the county. There was little evidence of time-space interaction. (no Refs)

23. CANCER OF THE LUNG, STOMACH, AND PANCREAS IN SOUTHERN LOUISIANA (MEETING ABSTRACT).

Correa P, Johnson WD, Fontham ET
Louisiana State University Medical Center, New Orleans, LA
Second Annual NCI/EPA/NIOSH Collaborative Workshop: Progress on Joint Environmental and Occupational Cancer Studies, September 9-11, 1981, Rockville, Maryland. National Cancer Institute 33 pp., 1981.

With the publication of the Atlases of Cancer Mortality for US Counties: 1950-1969, it became apparent that cancer mortality rates in southern Louisiana are significantly higher than rates for the United States as a whole for all sites combined and for particular site/sex/race groupings. Studies to determine factors associated with excess risk for cancer of the lung in southern Louisiana utilizing death certificate analysis reported

a two-fold excess lung cancer risk associated with certain industries in 19 south Louisiana parishes. In order to adequately assess the impact of potential risk factors on cancer of the lung, stomach and pancreas, a case-control study using an interview format to obtain detailed information on residence, occupation, tobacco usage, diet, and ancestry was determined to be the next investigative step. The purpose of this research project is to evaluate environmental determinants of cancer of the lung, stomach and pancreas in south Louisiana by a comparison of the characteristics and interview responses of cancer cases and their matched controls. The 26 parishes included in the study extend from Calcasieu parish on the Texas-Louisiana border to Orleans parish on the Mississippi-Louisiana line and from the Gulf of Mexico to the middle of the state in a north-south direction. Twenty-five hospitals are participating in the study. Outside the metropolitan New Orleans area, virtually total coverage exists. Within the metro area, a sample of public and private hospitals are included. Cases diagnosed and/or treated in any study hospital are identified and confirmed primarily through hospital pathology offices. Controls are selected from hospital admissions and are matched to cases by hospital, race, sex, and age +/-5 yr and must also be residents of the 26 study parishes. Interviewing of lung cases was completed June 30, 1981, with approx 1250 cases over the two yr period, 1979-1981. Two hundred ten stomach cancer cases and 160 pancreas cancer cases have been interviewed as of June, 1981, and interviewing will continue through Spring, 1982. Preliminary analysis of smoking histories and dietary information has begun and detailed analysis will follow. (no Refs)

24. ETIOLOGIC STUDY OF RESPIRATORY CANCER IN COASTAL TEXAS (MEETING ABSTRACT).

Buffler P
University of Texas, School of Public Health, Houston, TX
Second Annual NCI/EPA/NIOSH Collaborative Workshop: Progress on Joint Environmental and Occupational Cancer Studies, September 9-11, 1981, Rockville, Maryland. National Cancer Institute 33 pp., 1981.

The University of Texas School of Public Health, in collaboration with the NCI, is conducting a study to evaluate the relationship of environmental factors to the incidence of respiratory cancer in Caucasian residents of Brazoria, Chambers, Galveston, Harris, Jefferson, and Orange Counties. (Harris County is not included in the investigation of male lung cancer). The diagnosis periods are July 1, 1976, through June 30, 1980, for the lung cancer cases (except for female lung cancer cases in Harris County for whom the diagnosis period is one yr shorter, beginning July 1, 1977) and for laryngeal cancer (for which only male cases are being examined) from July 1, 1975, through June 30, 1980. The cases to be studied are individuals between the ages of 30 and 79 at the time the cancer diagnosis was first made. In the investigation of male lung and laryngeal cancer, the exposures of primary interest are those relative to occupational exposures with attention also to residential factors and smoking and alcohol histories. In the examination of female lung cancer, residential and occupational exposures are the focus of the study and smoking and alcohol patterns are being assessed. Other risk factors of interest are subjects' medical history, family history of cancer, Vitamin A deficiency and socio-economic status. This is a case comparison interview study. Interviews are being conducted with the lung and laryngeal cancer cases or their next of kin, and compeers. In addition, incidence rates for lung cancer and male laryngeal cancer are being determined for the study diagnosis periods. It is currently projected that cases will be ascertained through September 1981. A detailed progress report will be made at this yr meeting including some preliminary findings. (no Refs)

25. THE EPIDEMIOLOGY OF CARCINOMA OF UTERINE CERVIX IN DIFFERENT INHABITANTS OF MEXICO.

Gaitan GV, Schulz C M, Nieto V A, Gonzalez R B
Universidad Nacional Autonoma, Ciudad Mexico, Mexico
Patol Quir Citol Exfoliativa; 7(2):49-54 1981

According to 1974 and 1975 statistics, mortality from cancer of uterine cervix/100,000 inhabitants was: 19 in Mexico, 24.3 in Venezuela, 7.7 in United States, and 5.9 in Israel. The 10,000 women of different socioeconomic groups (low, middle, high), urban, suburban and rural areas, were examined by colposcopy or magnifying glasses, where colposcope was not available, and smears. Multiple biopsies were performed in all suspicious cases and also when smears showed dysplasia or cellular alterations. The results found in 4,819 women examined in Mexican Federal District included normal cervix in only 1.5% o f the low socioeconomic group, 4.3% in middle, and 14% in high, simple cervicitis 9.7%, 17%, 25%, ectropion 76.2%, 68%, 45%, dysplasias 3.3%, 1.7%, 1.2%, carcinomas in situ 1.9%, 0.9%, 0.5%, and invading carcinomas 2.61%, 1.9%, 1% respectively. Most frequent lesion was ectropion. These results were similar to those found in the province and for the whole sample. (9 Refs) (In SPA)

26. FACTORS ASSOCIATED WITH ADENOCARCINOMAS OF THE LARGE BOWEL IN PUERTO RICO.

Martinez I, Torres R, Frias Z, Colon JR, Fernandez N
Cancer Control Program, Dept. Health, Puerto Rico
Rev Latinoam Oncol Clin; 13(1):13-20 1981

A case-control study of 461 patients with adenocarcinoma of the colon seen during the period 1973-1975 and 461 sex- and age-matched controls was conducted. Subjects or relatives (102 pairs) were questioned on long-term dietary and personal habits, and familial aggregation of cancer. Of the 461 adenocarcinomas, 232 were in the colon and 229 were in the rectum and rectosigmoid junction (1.2:1 male-female ratio). Highest number of patients were 65-74 yr old. Twenty-two percent of patients were professionals vs 18.5% of controls. Significantly more patients (29.1%) than controls (16.5%) were heavy cigarette smokers. Patients reported significantly greater frequency of consumption of meats (34.7% high frequency vs 24.3% in controls), cereals (26.7% vs 18.7%), fats (49.2% vs 36.7%), total residue (36.4% vs 29.5%), and fiber (51.4% vs 42.3%). Patients also had more previous nonmalignant chronic disease of the large bowel (diverticulosis, intestinal polyposis, ulcerative colitis, other types of colitis, chronic constipation, diarrhea, and hemorrhoids), higher grade of constipation, and more direct relatives with cancer (for cancer of the large bowel, 22 relatives among patients vs 9 among controls). Recall bias may be expected in this type of study. (25 Refs)

27. CANCER INCIDENCE IN THE NETHERLANDS ANTILLES: A SURVEY COVERING THE PERIOD 1968-1979.

Freni SC, Freni-Titulaer LW
Dept. Pathology, Landslaboratorium, 55 Heelsumstraat, Curacao, Netherlands Antilles, West Indies
Cancer; 48(11):2535-2541 1981

In 1977 a retrospective study was started into the cancer incidence in the Netherlands Antilles, simultaneously with the onset of a cancer registry. This paper presents the results of this study and of the running registry, together covering a period of 12 yr. In total, 1,496 cancer cases were registered in males, and 1,480 in females. The resulting age-standardized

cancer rate (World Standard Population) was 215 cases per 100,000 males and 164 cases per 100,000 females. The most frequently involved primary sites in males were, in order of frequency, lung, stomach, prostate, skin, and esophagus. Cancer in females was most frequently found in breast, uterine cervix, skin, stomach and esophagus. A compa rison is made with countries inside and outside the Caribbean region, and a short comment is made on possible etiologic factors. (Author abstract) (17 Refs)

28. TUMOURS IN ICELAND: 4. TUMOURS OF THE UPPER RESPIRATORY TRACT AND EAR. A HISTOLOGICAL CLASSIFICATION AND SOME ETIOLOGICAL AND EPIDEMIOLOGICAL CONSIDERATIONS.

Cooper MA, Hallgrimsson J
Dept. Pathology, Univ. Iceland, 121 Reykjavik, Iceland
Acta Pathol Microbiol Scand [A]; 89(5):377-387 1981

Primary tumors from the upper respiratory tract and ear submitted for a histological diagnosis in Iceland during the 20 yr, 1955-1974, were reviewed and typed according to the World Health Organization Classification published in 1978. The series included 83 benign and 114 malignant tumors from the upper respiratory tract. The nasal cavity was the commonest site for benign tumors in both sexes, most being squamous cell and transitional papillomas. The larynx was the commonest site for malignant tumors in males, all being squamous cell carcinomas, and the paranasal sinuses and the nasopharynx in females, squamous cell carcinoma forming the largest group in the sinuses and undifferentiated carcinoma in the nasopharynx. The distribution of tumors in the nasal cavity and sinuses differed much between the two sites and between the sexes, which emphasizes that these two sites should be separated and not combined as they have been until recently in epidemiological reports and cancer registries. A relatively high incidence of nasopharyngeal carcinoma in Iceland may be due to a high consumption of salted food. A rising incidence of laryngeal carcinoma is believed to be related to the use of tobacco and alcohol and is of special concern owing to its marked rise in young females. (Author abstract) (30 Refs)

29. EPIDEMIOLOGY OF CANCER -105 YEARS OF MORTALITY STATISTICS.

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Deutsches Zentralkomittee zur Bekampfung der Tuberkulose, Poppenhusenstr. 14c, D-2000 Hamburg 60, W. Germany
MMW; 123(40):1491-1497 1981

Results of a retrospective analysis of cancer mortality in Hamburg, West Germany, from 1873 to 1978 are presented. Cancer deaths were classified according to the site of the primary disease and the age of the patient. The analyses led to three conclusions: the occurrence of cancer is highly dependent upon the age of the patient; the total incidence of all forms of cancer among the population remained relatively constant for 105 yr; and this consistency in overall incidence was due to the fact that any increase in the incidence of cancer at one site was balanced by a decrease in the incidence of cancer at a different site. Environmental factors that may influence the rates of occurrence of selected types of cancer are considered. Lung cancer is discussed in detail with respect to relative rates in men and women, causes, and influence of environmental factors. The use of this study as a model for cancer epidemiology is suggested. (11 Refs) (In GER)

30. ADVANCES IN CANCER EPIDEMIOLOGY IN SOUTH AFRICA.

Harington JS
Cancer Res. Dept., Natl. Cancer Assoc. South Africa, P.O. Box 2000, Johannesburg 2000, South Africa
S Afr Cancer Bull; 25(1/2):9-18 1981

The epidemiology of cancer in South Africa (SA) is discussed through the review of four papers on the cancer pattern in black gold miners in SA (1964-79), comparison of cancer mortality rates in SA with those of other countries, cancer mortality rates for blacks, whites, persons of mixed race (black and white), and Asians in SA (1970-77), and the cancer problem among blacks in SA. Mortality rates were compared for all groups (SA and US: United States). Much less cancer was found in the SA urban black than in any of the other groups. The SA colored community had rates which were very nearly the highest for most of the common cancers for each site of almost all the cancers considered. The cancer pattern in SA whites of both sexes was similar to that of US whites. Whereas US blacks had consistently higher rates than US whites but the same pattern, SA blacks had a different cancer pattern to that of either the coloreds or whites in SA. The pattern for SA blacks comprised high rates for esophagus, liver, and lung cancer in males, and for cervix and esophagus cancer in females, while rates for colorectum, stomach, and female breast cancer were low. Colored males had the highest cancer risk in SA. The colored female is not nearly as much at risk as the male. Comparison between SA colored and US black males showed cancer rates to be higher in the coloreds. The overall mortality rate for cancer in SA urban blacks was lower than that for SA whites or coloreds, both males and females. The implications of these studies are discussed. (17 Refs)

31. CHARACTERISTIC FEATURES OF CANCER IN TURKEY (MEETING ABSTRACT).

Firat D
No affiliation given
First UICC Conference on Cancer Prevention in Developing Countries, August 25-29, 1981, Nagoya, Japan. International Union Against Cancer 368 pp., 1981.

Although the entire characteristic features of cancer in Turkey is not fully known due to the fact that the cancer registries are not widely used, one can easily conclude from available data that the cancer is becoming one of the most important medico-social problem in this country. The statistical data of the State Institute of Statistics indicate that about 6.5% of all deaths in province and district centers of Turkey is due to the cancer. Even though this figure may well be a gross under estimate because of the fact that cancer is not a reportable disease and often the terminal event of deaths (such as heart failure, pneumonia, etc) are entered in death certificates rather than the underlying disease, the cancer is the third leading cause of death. If the 0-1 age group, where infant mortality due to infections and pneumonia is prevalant, is excluded, the cancer deaths constitute about 9.5% of all deaths as a second leading cause of death in Turkey. The most frequent cancer mortality in men are due to the carcinoma of the lungs and stomach (32% and 15% of all cancer deaths), while in women carcinoma of the stomach and breasts are the two leading types of cancer (16% and 6.6% of all cancer deaths). On the other hand, two separate morbidity statistics indicate that the cancer of the skin, followed by carcinoma of the breast, larynx, lungs and stomach are the most frequent types of cancers in Turkey. In pediatric age groups (0-14), acute leukemias, malignant lymphomas, bone and soft tissue tumors are the most frequent

types of malignancies. There are no dependable large statistical data demonstrating geographical distribution of the cancers in Turkey at the present. (no Refs)

32. CHARACTERISTIC FEATURES OF CANCER IN SAUDI ARABIA (MEETING ABSTRACT).

Shobokshi O
No affiliation given
First UICC Conference on Cancer Prevention in Developing Countries, August 25-29, 1981, Nagoya, Japan. International Union Against Cancer 368 pp., 1981.

Few countries are of more epidemiological interest than Saudi Arabia which is undergoing the most rapid development of any society. Malignant lymphoma appears to be the commonest of the life-threatening malignancies. There are several differences between malignant lymphoma in Saudi Arabia and the Western world, including an earlier peak of prevalence, different proportions of sub-types and the remarkable ethnic prevalence of intra-abdominal non-Hodgkin's lymphoma. More than half of solid childhood malignancies are lymphomas. Burkitt's lymphoma has been identified. Distribution of cancers of the gastro-intestinal tract is the reverse of that encountered in the West in that cancer of the mouth and esophagus are more common than cancer of the lower intestinal tract. Lung cancer is relatively uncommon. The influence of customs and traditions is seen in the late presentation of cancer of the female breast and in some features of cancer of the female genital tract. Finally, the well-known causal relationship between schistosoma haematobium and squamous cell cancer of the bladder has been described in Saudi Arabia. (no Refs)

33. CANCER MORBIDITY AND MORTALITY IN THAILAND (MEETING ABSTRACT).

Wiwatwong Isarangkul NA
No affiliation given
First UICC Conference on Cancer Prevention in Developing Countries, August 25-29, 1981, Nagoya, Japan. International Union Against Cancer 368 pp., 1981.

In 1977, 3,568 male and 4,628 female cancer cases were found at the NCI, the Cancer Institute Siriraj Hospital and the Ramathibodi Hospital, collectively. During the same period, the re were 4,718 men and 3,659 women reported as dead due to cancer in Thailand at the Division of Health Statistics, Ministry of Public Health. It should be noted that cancers of the buccal cavity, penis and larynx, while being among the ten leading sites of cancer in men, were not among the ten leading sites of cancer death. Conversely, cancer of the brain, small intestine and leukemia were among the ten most common causes of cancer mortality but were not included in the ten most common cancers in men. In the same token, cancers of the buccal cavity, ovary and skin were among the ten leading sites but were not among the ten most common causes of cancer death in women. Again, leukemia and cancer of the brain, while being relatively rare, were included in the ten most common fatal cancers in Thai women. Although cancer was found to be the fifth reported cause of death among Thai people in 1977, it turned out to be the most common reported cause of death among those living in Bangkok in 1978. The necessity of having at least one population-based cancer registry in Thailand cannot be overemphasized. So far true cancer incidence of even a single population, let alone the whole country, has not been assessible. Any cancer prevention program without baseline cancer incidence data would be in a very haphazard situation. (no Refs)

34. GEOGRAPHIC DISTRIBUTION OF LUNG CANCER MORTALITY AND ENVIRONMENTAL FACTORS IN JAPAN.

Minowa M, Shigematsu I, Nagai M, Fukutomi K
Dept. Epidemioloy, Inst. Public Health, Tokyo, Japan
Soc Sci Med [Med Geogr]; 15(1):225-231 1981

Standardized mortality ratios (SMRs) for lung cancer were calculated for all cities, towns, and villages in Japan on the basis of 1969-1974 mortality data. Environmental factors associated with the mortality were studied to identify the causes of geographical differences in mortality patterns. Urban areas and areas with coal or lignite mines and steam power plants had significantly higher SMRs than other areas. Oil refineries, metal refineries, and iron plants also appeared to be related to the geographical differences. The SMRs were higher in coastal areas than in inland areas, and they were especially high for men in fishing ports. (1 Ref)

35. A HYPOTHESIS ON THE ETIOLOGY OF ADULT T-CELL LEUKEMIA/LYMPHOMA.

Tajima K, Tominaga S, Shimizu H, Suchi T
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Gan; 72(5):684-691 1981

The results of the nationwide survey performed by the T- and B-cell Malignancy Study Group revealed that adult T-cell leukemia/lymphoma (ATLL) was prevalent in limited zones in Kyushu, mainly in coastal areas, warm in winter and humid in summer. It was found that the geographical distribution of filariasis was very similar to that of ATLL. It is known that filariasis affects lymphatic vessels and resul ts in several lymphoreticular ailments, and microfilaria is transmitted by mosquitoes infected with some kinds of not yet fully identified viruses. From analyses of the time trends of the av wt and height of school children by prefecture, it is suggested that the nutritional condition of inhabitants in Kyushu might have been poorer than that of inhabitants of other areas in Japan, especially in the past. In order to elucidate the etiology of ATLL, relevant geographic-pathological information and other related information was accumulated and an etiological hypothesis was formulated. It was hypothesized that repeated exposure to filarial antigen and some viruses might have played an important role in the etiology of ATLL and that undernutrition had also contributed to the progression of ATLL. (Author abstract) (31 Refs)

36. A STUDY OF THE GEOGRAPHICAL PATTERN OF CANCER MORTALITY FOR SELECTED SITES BY MEANS OF FACTOR ANALYSIS.

Inaba Y, Yanai H, Takagi H, Yamamoto SI
Dept. Hygiene, Juntendo Univ., Japan
Soc Sci Med [Med Geogr]; 15(1):233-244 1981

Factor analysis of the geographical distribution of cancer mortality in 46 Japanese prefectures during 1958-1971 revealed a significant correlation between the rate of primary industry and skin, prostate, lymphoid tissue, or bladder cancer and leukemia in men. In women, uterine and liver cancer and leukemia correlated positively with natural environmental factors (temperature, precipitation). Lung, intestinal, and oral cancer correlated with population density and appeared to be related to industrialization or urbanization. There was also a significant positive correlation between the rate of primary industry and pancreas and bile duct cancer in women. Esophageal cancer

did not correlate with the primary industry rate, the natural environmental factors, or population density. Food consumption in Japan and 24 other countries also was analyzed. Despite the different data sources, similar clustering of cancer sites was noted; ie, prostate, skin, and leukemia for men, skin and leukemia for women, and intestines and lungs for both sexes. (15 Refs)

37. CANCER DEATHS BY CITY AND COUNTY IN JAPAN (1969-1971): A TEST OF SIGNIFICANCE FOR GEOGRAPHIC CLUSTERS OF DISEASE.

Ohno Y, Aoki K

Dept. Preventive Medicine, Nagoya Univ. Sch. Medicine, Nagoya, Japan

Soc Sci Med [Med Geogr]; 15(1):251-258 1981

The geographic distribution of esophageal, breast, and uterine cancer mortality by city and county in Japan was analyzed by a chi-square significance test. The test procedure included identification of all geographically adjacent areas, enumeration of observed adjacent concordant category pairs (accp), and calculation of expected accp. Areas with high esophageal cancer mortality were significantly clustered in both sexes, and those with low mortality were clustered in males. In the case of uterine cancer, significant aggregations were observed in areas with low or slightly high mortality rates. There was no significant aggregation for breast cancer. The validity of the chi-square test was confirmed by a Monte Carlo approach to Knox's test for space-time clustering. (11 Refs)

38. NATIONAL SURVEY OF CANCER MORTALITY IN CHINA (MEETING ABSTRACT).

Ha HW, Li B, Li J

No affiliation given

First UICC Conference on Cancer Prevention in Developing Countries, August 25-29, 1981, Nagoya, Japan. International Union Against Cancer 368 pp., 1981.

A nation-wide retrospective survey of cancer mortality for a 3 yr period was conducted in China. Three hundred and ninty-five cities and 2,136 counties were covered with a population of more than 850 million. Data were collected on mortality due to 56 causes, including 15 types of cancers. They were repeatedly checked were considered reliable. Cancer was found to be the second and third leading causes of death among males and females. It was the first cause of death among 429 counties in the male, and among 161 counties in the female. Approx 700,000 people would die of cancer each yr in China with a crude mortality rate of 73.99 per 100,000. There were 13 provinces in China in which cancer motality rate (age adjusted to the world standard population) exceeded 100 per 100,000. In sequence of anatomic site, cancers of the upper alimentary tract were the most common. Stomach cancer occupied the first place while esophageal cancer ranked second and liver cancer was third in frequency. These three cancers accounted for 60% of all cancer deaths. In sequence among the national minorities, cancer rates were highest among the Kazak, the Hui and the Korean. The Miao and Yi tribes gave the lowest rates. Some cancers were common throughout China while others differed remarkably among the various geographical regions. These geographical distribution characteristics are to be reported in the Atlas of Cancer Mortality of the People's Republic of China. (no Refs)

OTHER EPIDEMIOLOGICAL FINDINGS

39. CANCER OF THE COLON.

Audigier JC, Lambert R

Faculte de medecine, Centre d'Epidemiologie du CNRS LP005440, avenue Rockefeller, 69373 Lyon Cedex 2, France

Gaz Med Fr; 88(28):3903-3909 1981

Epidemiological factors related to colon cancer (CC) are considered. The number of CC cases increases linearly with age for both sexes. The male:female CC ratio is usually greater than 1. The genetic factor is most evident in CC developing in patients with multiple polyposis or extracolonic tumors (Gardner's syndrome). Geographic variations in the incidence of CC are described. Through the study of persons migrating from Japan or Poland to the United States, a country at high risk for CC, the importance of environment and diet in the development of CC is evident. Variations in CC incidence over time a re discussed. The risk of CC is greater in persons with polyps. The malignant potential of these adenomas varies according to the size, histological type, and degree of epithelial abnormality of the lesions. Adenomatous polyps are usually small and less likely to become malignant than are villous polyps. Patients with inflammatory intestinal disease, such as ulcerative colitis and Crohn's disease are more likely to develope CC. An excess of animal fats and cholesterol and a lack of fiber are the dietary factors most often related to the development of CC. The early detection and prevention of CC are discussed. (10 Refs) (In FRE)

VIRAL FACTORS INVOLVING ENVIRONMENTAL AND OCCUPATIONAL EXPOSURE

40. CASE-CONTROL STUDY OF THE HUSBANDS OF WOMEN WITH DYSPLASIA OR CARCINOMA OF THE CERVIX UTERI.

Buckley JD, Doll R, Harris RW, Vessey MP, Williams PT

Dept. Family and Preventive Medicine, Univ. Southern California, 2025 Zonal Ave., Los Angeles, CA, 90033

Lancet; 2(8254):1010-1015 1981

The husbands of married women with cervical dysplasia, carcinoma-in-situ, or invasive carcinoma of the cervix who, in an earlier study, had claimed to have had no sexual partner other than their husband, were interviewed to determine whether the risk of cervical epithelial abnormalities in the women could be related to their husband's sexual background. Of 322 women previously studied, 57 were eligible for this study and the husbands of 31 of them were interviewed together with the husbands of a control group, matched for age and age at first intercourse. The number of sexual partners reported by the husband was found to be a significant risk factor, with a relative risk of 7.8 for 15 or more partners outside marriage. The relative risk for women who smoked was 7.0, and this was independent of any of the sexual risk factors. The findings for subgroups of women with invasive carcinoma and with dysplasia or carcinoma-in-situ were similar. The data strongly support the view that an infectious agent is involved in the etiology of cancer of the cervix and suggest that smoking may have an independent carcinogenic action. (Author abstract) (28 Refs)

POTENTIAL CARCINOGENIC FACTORS RELATED TO MEDICAL TREATMENT

41. CANCER RISKS OF MEDICAL TREATMENT. PART II: POTENTIALLY CARCINOGENIC MEDICATIONS IN CURRENT USE.

Schottenfeld D
Dept. Medicine, Memorial Sloan-Kettering Cancer Center, New York, NY
Clin Bull; 11(2):75-82 1981

Experimental and epidemiological data on the carcinogenicity of currently available drugs are reviewed. Patients treated with cytotoxic antineoplastic agents are at increased risk for bladder cancer and acute nonlymphocytic leukemia. Immunosuppressive agents are associated with development of lymphoreticular malignancies in renal transplant recipients. Estrogen administration increases t he risk of endometrial and breast carcinoma in menopausal and postmenopausal women. Oral contraceptives have been shown to be associated with endometrial cancer, uterine cervical dysplasia, and cervical carcinoma in situ. Oral contraceptives reduce the risk of benign breast diseases. Androgenic anabolic steroids have been found to cause liver carcinoma. Methoxypsoralen in the presence of UV increases the risk of skin carcinoma. Phenacetin-containing analgesics have been shown to cause chronic interstitial nephritis, carcinoma of the renal pelvis, and bladder carcinoma. Potentially carcinogenic but cost-effective drugs should be prescribed at the lowest dose and for the shortest period of time. (59 Refs)

42. OTHER IATROGENIC CANCERS (MEETING ABSTRACT).

Ross RK
No affiliation given
The Causes of Cancer, November 6, 1981, Los Angeles, California California Hospital Medical Center; 1981

The majority of iatrogenic cancers fit into two categories: those induced by diagnostic or therapeutic radiation and those induced by prescription drugs. Since radiation induced cancer has already been discussed in detail, this session will be primarily concerned with drugs as causes of human cancer. Several drugs which are now recognized as causes of human cancer have been detected only because of the rarity of the cancer in the absence of the drug. For example, the association between a mother's use of diethylstilbestrol during pregnancy and the development of clear cell adenocarcinomas of the vagina in her daughter decades later was only detected because several cases of this extremely rare tumor were noted in a single hospital in a rather short period of time. Similarly, in a case-control study at University of Southern California, it was demonstrated that risk to women or a rare form of liver cancer, benign liver adenoma, was strongly related to duration of use of oral contraceptives. It seems likely that such relationships exist for more common cancers by go undetected either because no one suspects this relationship or the relationship is difficult to study in the face of other factors causing the same disease. In fact, several such relationships with more common cancer sites have been demonstrated in recent yr. Use of amphetamines has been shown to increase one's risk to Hodgkin's disease some 4-6 fold, use of immunosuppressive drugs has been demonstrated to greatly increase risk to non-Hodkins' lymphomas and use of estrogen replacement therapy, perhaps the most widely studied group of drugs in terms of cancer risk, increases risk of endometrial cancer and breast cancer. (no Refs)

ANALYTICAL AND METHODOLOGICAL ASPECTS OF CANCER EPIDEMIOLOGY

43. RADIATION EQUIVALENCY OF ENVIRONMENTAL CARCINOGENS: ASSAY SPECIFICITY (MEETING ABSTRACT).

Stevens RH, Cole DA
Department of Radiology, University of Iowa, Iowa City, IA, 52242
Clin Chem; 27(6):1066 1981

A major health concern for any new drug or chemical introduced in our population is its potential for inducing cancer. The presently utilized National Cancer Institute bioassay for carcinogenicity requires between two to four yr of continuous animal maintenance prior to tissue analysis and costs ranging anywhere from 300,000-500,000 dollars per substance. We have recently developed an in vivo assay designed to overcome these deficiencies based upon the induction of antitumor cell-mediated immunity (CMI) upon exposure to carcinogens compared with the levels brought about by exposure of only the hypoxic ileum and jejunum to x-rays. This allows mutagenicity/carcinogenicity to be expressed in terms of moles/rad. The procedure involves determining the increased injury to cultured x-ray induced small bowel adenocarcinoma cells as reflected in increased release of their radioiodinated membrane proteins brought about by peripheral blood lymphoid cells (PBLC) obtained from exposed rats. The present study was undertaken to establish the specificity for such measurements. The findings indicate that cytotoxic PBLC to the intestinal cancer tissues that were induced by x-rays and chemicals were not induced by nonspecific forms of injury (radiation or surgery), substances inducing cancer in other than gastrointestinal tissues (asbestos induced mesothelioma) or spontaneously arising tumors (breast or prostate). Conclusions from the study are that immunological measurements can be utilized to readily determine the mutagenicity/carcinogenicity potential of a drug. (1 Ref)

44. COMPLETION OF 1972 MORTALITY DATA, NCI/NCHS COOPERATIVE STUDY (MEETING ABSTRACT).

Patterson JE
No affiliation given
Second Annual NCI/EPA/NIOSH Collaborative Workshop: Progress on Joint Environmental and Occupational Cancer Studies, September 9-11, 1981, Rockville, Maryland. National Cancer Institute 33 pp., 1981.

In reporting the vital statistics for 1972, the National Center for Health Statistics (NCHS) included information from a 50% sample of certificates. While this sample is argued to be representative of the total United States, it is not representative of individual states or counties of the US. Due to the historic interest of the NCI in investigating cancer mortality at the county-level, I became involved in attempting to convince the NCHS to code the missing 50% for 1972. The NCHS adopted this coding procedure for 1972 in an attempt to catch up, and, thus, be able to present summary vital statistics data in a more timely manner. Due to the fact that the sample was not stratified by cause of death, age, sex, and race, one has no way of knowing what percent of the total number of events one has for a specific cause of death at the local level. With support from the Office of the Secretary, DHHS, we at NCI were charged with supporting the coding of the missing 50%. This translates to 983,108 death certificates. As of March 31, 1981, all coding for the 983,108 records was completed. Since that time, NCHS staff have been involved in cleanup of file,

review, and reconciliation of rejected records, tabulating for file validation, and preparation and transmittal of the final data tape. A detailed progress report on each of these areas will be presented in September 1981. (no Refs)

GENERAL AND MISCELLANEOUS FACTORS

45. SECOND ANNUAL REPORT ON NATIONAL CANCER INSTITUTE AND ENVIRONMENTAL PROTECTION AGENCY PROJECTS.

Department of Health and Human Services
Public Health Service, NIH, Bethesda, MD
Second Annual Report on National Cancer Institute and Environmental Protection Agency Projects. Bethesda, MD, National Cancer Institute, 384 pp., 1981.

Current projects underway under the auspices of the National Cancer Institute and the Environmental Protection Agency are described. Progress reports are presented for the following: a data base for chemicals identified in human biological media; in vivo analysis of UV-B-induced photooxidations; use of the hairless mice for carcinogenesis studies; chronic toxicity and carcinogenicity to rats and mice of chloroform in drinking water; the effects of carcinogens, mutagens, and teratogens on non-human (aquatic) species; the cost effectiveness of two types of personal UV-B dosimeters; the effects of varying doses of UV on mammalian skin; immunodiagnostic markers for breast cancer; antigens on human lymphoid organs for the immunodiagnosis of leukemias and lymphomas; human epithelial cell metabolic activation systems for use with human cell mutagenesis; evaluation of the transformation assay using C3H 10T1/2 cells for use in screening chemicals for carcinogenic potential; national mortality data bases for environmental epidemiology; epidemiologic field studies on ecological relationships between specified toxic substances and cancer morbidity and mortality, an epidemiologic study of populations in Turkey previously exposed to hexachlorobenzene; a case control study of lung, pancreas, and stomach cancer in Southern Louisiana; support services for epidemiologic studies of lung cancer in communities with non-ferrous smelters; an epidemiologic study of the incidence of cancer as related to industrial emissions in the heavily industrialized parts of Contra Costa County in California; an environmental data base for New Jersey to be used in epidemiological studies; an etiologic study of respiratory cancer in coastal Texas; and completion of the NCI/NCHS cooperative study of 1972 mortality data. (no Refs)

46. ASSESSMENT OF THE ROLE OF MUTAGENS AND ENDOGENOUS FACTORS IN LARGE BOWEL CANCER.

Weisburger JH, Spingarn NE, Wang YY, Vuolo LL
American Health Foundation, Valhalla, NY
Cancer Bull; 33(4):124-129 1981

Etiology of large bowel cancer is discussed. The production of abnormal DNA through the direct attack of radiation, chemicals, or viruses, or through improper DNA polymerase activity during DNA synthesis or repair, is only the first step in a long sequence of events terminating in a malignant invasive neoplasm. Rate of cell duplication as controlled by promoters or inhibitors is also important for neoplasm development. Chemical carcinogens, accounting for the majority of human cancers, can be divided into two major groups: genotoxic (direct-acting, procarcinogen, and inorganic carcinogen) and epigenetic (solid-state carcinogen, hormone, immunosuppressor, co-carcinogen, and promoter). Colon cancer incidence and mortality vary as a function of geographic area of residence. The key environmental difference between low-risk and high-risk countries appears related to diet, particulary fat and fiber consumption. In order for colon cancer to occur, both promoters (ie high fat diet) and initiators (ie mutagens produced during frying or broiling of meats and fish) may be required. Variations in these factors and high fiber intake can alter the incidence of colon cancer. (38 Refs)

47. THE EPIDEMIOLOGY OF BENIGN BREAST DISEASE.

Ernster VL
Dept. Epidemiology and International Health, 1699HSW, Univ. California, San Francisco, CA, 94143
Epidemiol Rev; 3:184-202 1981

Epidemiology of benign breast disease (BBD) is reviewed. Topics include BBD (the problem of case definition), estimates of the occurrence of BBD, evidence for an association of BBD and breast cancer, interaction of BBD and other risk factors for breast cancer, and factors associated with BBD (age, race, socioeconomic status, menstrual and reproductive characteristics, family history of breast cancer, obesity, endogenous hormone levels, and exogenous hormone use). Published data for the occurrence of BBD, risk of breast cancer associated with BBD, relative risk of breast cancer associated with various factors among women with and without BBD, menstrual and reproductive factors in relation to BBD, and biopsy-defined BBD and oral contraceptive use are summarized. Evidence suggests that risk of breast cancer associated with various factors may be greater in women with BBD than in those with no such history; inconsistencies across epidemiologic studies may result from a lack of analyses specific to histopathologic type of benign disease. (79 Refs)

48. BLADDER CANCER EPIDEMIOLOGY.

Matanoski GM, Elliott EA
Dept. Epidemiology, Sch. Hygiene and Public Health, Johns Hopkins Univ., 615 North Wolfe St., Baltimore, MD, 21205
Epidemiol Rev; 3:263-229 1981

Well-known risk factors for bladder cancer are reviewed briefly; unresolved aspects of bladder cancer epidemiology are explored. Topics include mortality and incidence rates (interna tional comparisons, demographic and geographic characteristics, time trends, personal characteristics), latency, cell type, and risk factors (smoking, sugar substitutes, coffee drinking, occupations, hair dyes, Schistosoma haematobium, risks in case clusters, viruses, drug use, and other factors and diseases). Published data on age-adjusted death rates for malignant neoplasms of bladder and other urinary organs for selected countries, annual incidence rates for selected cancer registries, age-specific death rates for malignant neoplasms of urinary organs by race and sex, correlation of age-adjusted death rates for malignant neoplasms of bladder and other urinary organs by sex for states, age-adjusted mortality and incidence rates for bladder cancer by sex for white and nonwhite races, association of smoking, coffee consumption, specific chemicals from the dye industry, and occupations with bladder cancer, and descriptive characteristics of studies relating occupation with risk of bladder cancer are presented. (108 Refs)

49. EPIDEMIOLOGY OF PITUITARY ADENOMAS.

Gold EB
Dept. Epidemiology, Sch. Hygiene and Public Health, Johns Hopkins Univ., 615 Wolfe St., Baltimore, MD, 21205
Epidemiol Rev; 3:163-183 1981

Epidemiologic data, methodological problems associated with study of epidemiologic characteristics, and causal factors for pituitary adenomas are reviewed. Clinical features and treatment of pituitary adenomas are summarized. Incidence and prevalence are presented with respect to age, pituitary tumors in children and adolescents, time trends, sex differences, geographic variations, and multiple endocrine adenomatosis syndrome Type I. Exogenous risk factors presented are radiation, chemical carcinogens, estrogens, and oral contraceptives. Included are analyses of pituitary tumors as a proportion of all CNS neoplasms from selected studies, male:female ratios of incidence rates of pituitary tumors from selected reports, pituitary adenomas as a proportion of ail primary CNS neoplasms from selected countries, av annual incidence rates/100,000 population for pituitary adenomas from selected countries, effects of diet, I131, and x-rays on induction of pituitary tumors in mice, incidence rate of pituitary tumors in female mice following total body neutron- and x-radiation, and frequency of pituitary adenomas in women with postpill vs non-postpill amenorrhea or amenorrhea-galactorrhea from selected reports. (154 Refs)

50. AVOIDABLE CANCER: ATTRIBUTION OF RISK.

Doll F.
Radcliffe Infirmary, Oxford, England
S Afr Cancer Bull; 25(3):125-146 1981

A broad review is presented of what the author prefers to call 'environmental and life-style' factors by which cancers might be avoided by methods that are socially acceptable or likely to become acceptable in the foreseeable future. Avoidance is considered at each age and not necessarily in r elation to reduction in total proportion of people who will ever be affected by the disease. Many subjects are considered: genetic factors; synergistic action of avoidable causes; attribution of risk (smoking, alcohol, etc); geophysical factors; carcinogens used in medical practice (arsenic, cyclophosphamide, etc); tobacco; alcohol; diet (including food additives) and overnutrition, fat and meat, fiber, Vitamin A, nitrosation in stomach, other mechanisms; and occupation, pollution and industrial factors. (40 Refs)

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DIETARY FACTORS IN CARCINOGENESIS

1. NUTRITION AND ENVIRONMENTAL HEALTH: THE INFLUENCE OF NUTRITIONAL STATUS ON POLLUTANT TOXICITY AND CARCINOGENICITY. VOLUME 2: MINERALS AND MACRONUTRIENTS.

Calabrese EJ

Environmental Health Program, Div. Public Health, Univ. Massachusetts, Amherst, MA

Nutrition and Environmental Health: The Influence of Nutritional Status on Pollutant Toxicity and Carcinogenicity. Volume 2: Minerals and Macronutrients. New York, John Wiley and Sons, 468 pp., 1981.

EPIDEMIOLOGY, ETIOLOGY AND GENETIC ASPECTS OF HUMAN CANCER

2. RETROSPECT AND PROSPECT OF STUDIES ON DIGESTIVE SYSTEM DISEASES IN CHINA.

Zhang X

Dept. Internal Medicine, Capital Hosp., Chinese Acad. Medical Sciences, Beijing, People's Republic of China

Zhonghua Xiaohua Zazhi; 1(1):1-4 1981

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3. EPIDEMIOLOGY OF PITUITARY ADENOMAS.

Gold EB

Dept. Epidemiology, Sch. Hygiene and Public Health, Johns Hopkins Univ., 615 Wolfe St., Baltimore, MD, 21205

Epidemiol Rev; 3:163-183 1981

4. BLADDER CANCER EPIDEMIOLOGY.

Matanoski GM, Elliott EA

Dept. Epidemiology, Sch. Hygiene and Public Health, Johns Hopkins Univ., 615 North Wolfe St., Baltimore, MD, 21205

Epidemiol Rev; 3:203-229 1981

5. THE EPIDEMIOLOGY OF BENIGN BREAST DISEASE.

Ernster VL

Dept. Epidemiology and International Health, 1699HSW, Univ. California, San Francisco, CA, 94143

Epidemiol Rev; 3:184-202 1981

ENVIRONMENTAL AND OCCUPATIONAL FACTORS IN CARCINOGENESIS

6. AIR POLLUTION AND BIOLOGICAL DEFENCE.

Schlipkoter HW, Dolgner R

Med. Institut fur Umwelthygiene an der Univ., Gurlittstrasse 53, D-4000 Dusseldorf 1, W. Germany

Zentralbl Bakteriol [Orig A]; 172(4/5):299-311 1981

In GER

7. CANCER AND THE PHYSICOCHEMICAL QUALITY OF DRINKING WATER IN QUEBEC.

Thouez JP, Beauchamp Y, Simard A

Dept. Geography, Univ. Montreal, Montreal, Quebec, Canada

Soc Sci Med [Med Geogr]; 15(1):213-223 1981

VIRAL AND IMMUNOLOGICAL ASPECTS OF CARCINOGENESIS

8. ONCOGENIC VIRUSES.

Wyke JA

Imperial Cancer Res. Fund, P.O. Box 123, Lincoln's Inn Fields, London WC2A 3PX, England

J Pathol; 135(1):39-85 1981

9. ROLE OF VIRUSES IN THE ETIOLOGY OF NATURALLY OCCURRING FELINE LEUKEMIA.

Essex M, Grant CK, Cotter SM, Hardy Jr WD

Dept. Microbiology, Harvard Sch. Public Health, 665 Huntington Ave., Boston, MA, 02115

Haematol Blood Transfus; 26:483-487 1981

METHODOLOGY IN CARCINOGENESIS RESEARCH

10. MAMMALIAN IN VIVO AND IN VITRO CYTOGENETIC ASAYS: A REPORT OF THE U.S. EPA'S GENE-TOX PROGRAM.

Preston RJ, Au W, Bender MA, Brewen JG, Carrano AV, Heddle JA, McFee AF, Wolff S, Wasson JS

Biology Div., Oak Ridge Natl. Lab., Oak Ridge, TN, 37830

Mutat Res; 87(2):143-188 1981

11. BACTERIAL SYSTEMS FOR CARCINOGENICITY TESTING.

Mohn GR

Dept. Radiation Genetics and Chemical Mutagenesis, State Univ. Leiden, Wassenaarseweg 72, 2333 AL Leiden, The Netherlands

Mutat Res; 87(2):191-210 1981

12. MUTAGENESIS BY CHEMICAL AGENTS IN V79 CHINESE HAMSTER CELLS: A REVIEW AND ANALYSIS OF THE LITERATURE.

Bradley MO, Bhuyan B, Francis MC, Langenbach R, Peterson A, Huberman E

Merck Inst. for Therapeutic Res., West Point, PA, 19486

Mutat Res; 87(2):81-142 1981

OTHER REVIEWS IN CARCINOGENESIS

13. CANCER BIOLOGY.

Ruddon RW

Biological Markers Program, NCI-Frederick Cancer Res. Center, Frederick, MD

Cancer Biology. New York, Oxford University Press, 344 pp., 1981.

14. AVOIDABLE CANCER: ATTRIBUTION OF RISK.

Doll R

Radcliffe Infirmary, Oxford, England

S Afr Cancer Bull; 25(3):125-146 1981

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ENVIRONMENTAL AND OCCUPATIONAL CARCINOGENESIS

SERIES CK02 No. 82/04

APRIL, 1982

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HE 20.3173/2:

ENVIRONMENTAL FACTORS: POLLUTION

1. THE HEALTH EFFECTS AND ECOLOGICAL SIGNIFICANCE OF CHLORINE RESIDUALS IN WATER.

Kalmaz EV, Kalmaz GD
Univ. Tennessee, Univ. Station 8163, Knoxville, TN, 37916
Chemosphere; 10(10):1163-1175 1981

Effects of chlorine residuals and organic compounds in drinking water and aquatic environments, particularly direct toxicity and/or carcinogenicity to human and aquatic life, are reviewed. Significant correlations between surface water chlorination and cancer mortality rates have been shown in humans. Elevated rates of bladder, rectal, colon, and gastrointestinal cancers in humans served by chlorinated water from the Mississippi River have been demonstrated. The use of chlorinated surface waters in Ohio was associated with stomach cancer in males and females, and with bladder cancer in males. Chloramine has been shown to be an extremely weak mutagen; involvement of DNA is suggested, since DNA-repair mutants are sensitive to the agent. In uremic patients, shortened RBC survival and hemolysis have been attributed to chlorinated tap water used in hemodialysis. Effects on aquatic life of chlorine residuals are reviewed. While more than 300 chlorinated organic compounds have been identified in chlorinated potable waters, cooling waters, and sanitary effluents, relatively little is known about their ecological effects. Laboratory research using animal models should focus on the chloramines and their effects on health. (65 Refs)

2. NITRATE CONTENT OF DRINKING WATER AND MALIGNANT TUMORS OF THE DIGESTIVE ORGANS AND URINARY BLADDER.

Takacs S, Gomori A
Borsod megyei Kozegeszsegugyi-Jarvanyugyi Allmoas, Miskolc, Hungary
Egeszsegtudomany; 25(3):235-247 1981

Relationships between the av nitrate content in drinking water and the incidence of malignant tumors of the esophagus, stomach, large intestine, liver, rectum, and urinary bladder, were studied on the basis of 2,755 cases reported during the period 1953-1980 from seven townships and five towns in a country in Hungary. There have been no appreciable changes in the nitrate levels in drinking water during the investigation period. The incidences (per 100,000 population) were 24.4 in men and 5.67 in women for esophageal tumors, 421.9 in men and 202.9 in women for gastric tumors, 84.6 in men and 78.7 in women for tumors of the large intestine, and 102.8 in men and 77.1 in women for rectal tumors. Patients in the age bracket under 40 yr accounted for 4.1% of all cases, patients in the age bracket 40-59 yr for 27.5%, and patients older than 60 yr for 68.4%. The nitrate level in the drinking water exceeded 100 mg/liter for 68.6-72.1% of the patients with digestive tract tumors, and for 54.7% of the patients with bladder tumors. The incidence of digestive tract tumors was highest at nitrate levels in the range of 100-200 mg/liter (-3.4-43%). The findings call for further epidemiological and physiological investigations. (15 Refs) (In HUN)

ENVIRONMENTAL FACTORS: COMMERCIAL PRODUCTS

3. COFFEE AND OVARIAN CANCER.

Trichopoulos D, Papapostolou M, Polychronopoulou A
Dept. Hygiene and Epidemiology, Univ. Athens Medical Sch., Goudi, Athens 609, Greece
Int J Cancer; 28(6):691-693 1981

Ninety-two women with common epithelial tumors of the ovary and 105 comparison w omen admitted for various orthopedic conditions were interviewed regarding demographic, socioeconomic and biomedical characteristics, including their use of coffee and tobacco. There was no association between tobacco smoking and ovarian cancer. However a statistically significant trend association was noted between coffee drinking and ovarian cancer (p = approx 0.03). The association could not be explained in terms of any other variable included in the present study. The relative risk for women drinking two or more cups of coffee per day was 2.2 with 95% confidence limits 1.0-4.8. Several descriptive epidemiologic data are compatible with a causal association between coffee and ovarian cancer. (Author abstract) (18 Refs)

OCCUPATIONAL FACTORS: SPECIFIC AGENTS OR INDUSTRIES

4. ASBESTOS-RELATED MESOTHELIOMA IN THE MONFALCONE AREA.

Bianchi C, Brollo A, Bittesini L
Servizio di anatomia, Ospedale Generale Provinciale di Monfalcone, Monfalcone, Italy
Pathologica; 73(1026):649-655 1981

Four patients (45-75 yr old; 3 male, 1 female) of diffuse pleural mesothelioma were studied by means of biopsy. All patients showed signs of asbestos exposure. The three males worked at the shipyards while the woman was probably exposed at home. The interval between the begining of asbestos exposure and death was approx 50 yr in three cases and 27 yr in one. Metastases were observed in all cases. In one case atypical chronic lymphatic leukemia was present. (18 Refs) (In ITA)

5. OCCURRENCE OF CANCER IN A SMALL COHORT OF ASBESTOS-EXPOSED WORKERS.

Hilt B, Rosenberg J, Langard S
Dept. Occupational Medicine, Telemark Sentralsjukehus, N-3900 Porsgrunn, Norway
Scand J Work Environ Health; 7(3):185-189 1981

Twenty-one young men of similar age were heavily exposed to asbestos dust during construction of a saltpeter plant from 1928-1929. The asbestos was used to fill grooves between blocks in huge granite towers where nitric acid was to be synthesized and stored. The jointing material was prepared in a room of approx 40 square meters; no ventilation system was used and no equipment for personal protection was available. The dust was so thick that the employees could barely see across the room. Crocidolite asbestos was the type generally used. Av length of exposure was approx 1 yr. In the 21 men, three cases of lung cancer were observed between January 1943 and June 1980; one of stomach cancer, two of malignant mesothelioma, one of myelomatosis, and one of malignant

melanoma were also seen. The observed/expected ratio for lung cancer including the pleural mesothelioma was 18.7. The mean latency period for lung cancer was 46 yr; for mesothelioma cases the latency was 22 and 48 yr. All fatal cancers observed in the cohort occurred in smokers (those who smoked during the last 10 yr of their lives); the smoking members of the cohort had a cancer mortality of 43.8% before reaching 65 yr compared with no cancer deaths among nonsmokers. Radiographic changes associated with asbestos exposure were present in 17/18 available chest radiographs. (22 Refs)

6. A COHORT STUDY ON CANCER AMONG WORKERS EXPOSED TO AN ANTIRUST OIL.

Jarvholm B, Lavenius B
Dept. Occupational Medicine, Sahlgrenska Sjukhuset, S-413 45 Goteborg, Sweden
Scand J Work Environ Health; 7(3):179-184 1981

An epidemiologic study of workers in an engineering company was conducted following the observation of three cases of cancer among women who wrapped bearing rings covered with antirust oil. Group A (98 persons) worked in the same packing department as the three affected women between 1954 and 1957 and were exposed to white spirit, mineral oil, lanolin, zinc naphthenate, and N-phenyl-1-naphthylamine + sodium nitrite. Group B (33) worked in another packing department and were exposed to mineral oil, vaseline, and stearic acid + sodium nitrite. Group C (31) had been treated for eczema from antirust oil in 1955 and had been exposed to white spirit, mineral oil, lanolin, zinc naphthenate, and N-phenyl-1-naphthylamine. Twelve cancers were found only among the women in Group A (expected value was 3.9 cancers); four cancers each were found in Group B and C (expected values were 2 and 3.8, respectively). The cancers in Group A were in the colon, breast, collum of the uterus (4), ovary (2), bladder, brain, thyroid, and reticulosarcoma. Two workers in Group C developed cancer of the bladder, one of whom was also included in Group A. The most likely etiological agent for Group A cancers is N-phenyl-1-naphthylamine, either alone or in combination with sodium nitrite. (15 Refs)

7. INFLUENCE OF FLUORIDE RECOVERY ALUMINA ON THE WORK ENVIRONMENT AND THE HEALTH OF ALUMINUM POTROOM WORKERS.

Eduard W
Inst. Occupational Health, PO Box 8149, DEP, Oslo 1, Norway
Scand J Work Environ Health; 7(3):214-222 1981

Dust exposure and health complaints were examined in potroom workers in a primary aluminum plant; results during a period when fluoride recovery alumina from a dry-cleaning process was used were compared with results during another period when pure alumina was used. A higher dust exposure and a higher prevalence of acute health complaints occurred when recovery alumina was used. Higher than expected prevalence of chronic pulmonary symptoms was also seen despite thorough selection before and during employment. No differences were seen between periods with respect to exposure to polycyclic aromatic hydrocarbons. Thus, potroom workers might have a higher risk of developing chronic pulmonary disease. (11 Refs)

8. CYTOGENETIC STUDY OF WORKERS EXPOSED TO METHYL-PARATHION.

de Cassia Stocco R, Becak W, Gaeta R, Rabello-Gay MN
Servico de Genetica, Instituto Butantan, Caixa Postal 65, Sao Paulo, Brazil
Mutat Res; 103(1):71-76 1982

Cell aberrations were studied in a group of 15 subjects exposed to methyl-parathion (O,O-dimethyl-o,p-nitrophenyl phosphorothioate); subject cholinesterase levels were 75% or less of normal. Period of exposure varied from 1 wk to 7 yr, with intermittent periods of non-exposure. Controls were 13 men with 100% cholinesterase level who had not been occupationally exposed to any chemical and were of comparable age and socioeconomic status. The workers exposed to methyl-parathion did not show an increased frequency of chromosome aberrations in lymphocyte cultures compared to the non-exposed controls. Considering that methyl-parathion is often contaminated with DDT (dichloro-diphenyl trichloroethane), seven exposed and eight control subjects were randomly assayed for DDT and its principal metabolite DDE (1,1-dichloro-2,2-bis[p-chlorophenyl]ethylene). Levels of DDT in exposed individuals did not differ significantly from those of controls. While it is known that increased chromosome aberrations occur in cases of acute intoxication, chronic exposure to small doses of methyl-parathion in the work place do not seem to produce the same effect. (16 Refs)

9. CARCINOMA OF THE BLADDER.

Tauber R
Urol. Univ.-Klinik, Klinikum Grosshadern, Marchioninistrasse 15, 8000 Munchen 70, W. Germany
Fortschr Med; 99(40):1630-1636 1981

The occurrence, diagnosis, and treatment of bladder cancer is reviewed. The etiology of such tumors is discussed with regard to the role of carcinogens, such as aromatic amines, and the increased risk of bladder cancer associated with specific occupations, such as those of painters and textile workers. The classification of bladder tumors is described with respect to histological criteria established by the World Health Organization, clinical TNM (tumor, node, metastases) staging and histopathologic P-classification, and various growth forms of the tumors. Symptoms of bladder tumors are outlined, and the value of different diagnostic procedures in correctly assessing TNM stages is considered. Surgical treatment of bladder tumors is discussed; emphasis is placed on factors which influence the choice of the initial surgical procedure and of the procedure to be used with recurrent tumors. Methods, indications, and advantages are described for transurethral resection, partial bladder resection, cystectomy, and urinary diversion following cystectomy. The efficacy of chemotherapy and radiotherapy in the treatment of these tumors is considered. The prognoses for patients with bladder tumors are examined; it is noted that early detection and accurate diagnosis have positive effects on prognosis. (no Refs) (In GER)

10. POWER CONSIDERATIONS IN EPIDEMIOLOGIC STUDIES OF VINYL CHLORIDE WORKERS.

Beaumont JJ, Breslow NE
Industrywide Studies Branch F-8, Natl. Inst. Occupational Safety and Health, 4676 Columbia Parkway, Cincinnati, OH, 45226
Am J Epidemiol; 114(5):725-734 1981

Nine retrospective mortality studies of workers exposed to vinyl chloride were reviewed to determine whether differences in their hypothesis testing results might be due to differences in

statistical power. Where possible, the power of each study was calculated for cancer of the lung, brain and liver. When power was taken into consideration, the results for liver and brain cancer were found to be consistent with an etiologic role for vinyl chloride. For lung cancer, the data were not consistent with an etiologic role, in that two studies with very high power yielded negative results. (Author abstract) (16 Refs)

OCCUPATIONAL FACTORS: GENERAL

11. EVIDENCE OF A MULTIPLICATIVE EFFECT BETWEEN CIGARETTE SMOKING AND OCCUPATIONAL EXPOSURES IN THE AETIOLOGY OF BLADDER CANCER.

Vineis P, Segnan N, Costa G, Terracini B
Servizio di Epidemiologia dei Tumori, Universita di Torino e Ospedale Maggiore, via Santena 7, 10126 Torino, Italy
Cancer Lett; 14(3):285-290 1981

Risk of bladder cancer resulting from the combined effects of exposure to tobacco smoke and occupational history was examined. Analysis of 225 case-control pairs (men, av age 59.0 yr for cases and 58.9 yr for controls) revealed an overall relative risk of developing bladder cancer of 4.8 for exposure to tobacco smoke and 1.7 for particular occupations (chemical industry, dye production, tire factories, petrol refining, gas plants, and typographers). The relative risk for smokers regardless of number of cigarettes smoked was 4.4 in non-occupationally exposed men, compared with 6.8 in occupationaly exposed men. The findings suggest a multiplicative effect between occupational exposure and cigarette smoke in human bladder carcinogenesis. (27 Refs)

EPIDEMIOLOGICAL FINDINGS INVOLVING SPECIFIC AREAS

12. BREAST CANCER IN DENMARK DURING THE PERIOD 1943-1976. CANCER STATISTICS 3.

Ewertz M
Cancerregisteret, Copenhagen, Denmark
Ugeskr Laeger; 143(42):2758-2760 1981

Statistical data are presented on breast cancer in Denmark during the period 1943-1976. The number of cases diagnosed per yr has increased from 1,038 in 1943-1947 to 2,173 in 1973-1976 in women and from 9 to 19 in men during the corresponding periods. In women, the breast cancer incidence (per 100,000 women) has increased from 59.3 in 1943-1947 to 80.6 in 1973-1976, while the mortality rate was 33.1 in 1943-1947 and 37.4 in 1973-1976. The incidence of breast cancer in women av 71.8 in Copenhagen, 63 in provincial towns, and 48.4 in rural areas in 1943-1947, and 89.8 in Copenhagen, 82.8 in provincial towns, and 71.9 in rural areas in 1973-1976, ie, there has been a tendency to equalization. The increase in incide nce has affected all age groups. There has been a slight increase in survival rate, which was most pronounced for the cases diagnosed between 1943 and 1957. (9 Refs) (In DAN)

13. HOW HIGH A PERCENTAGE OF ENVIRONMENTALLY RELATED CANCER CASES CAN BE PREVENTED IN NORWAY?.

Langard S
Yrkesmedisinsk avdeling, Telemark sentralsjukehus, 3900 Porsgrunn, Norway
Tidsskr Nor Laegeforen; 101(28):1602-1606 1981

Approx 110,000 cases of cancer were recorded in Norway during the period 1966-1975. Esophageal cancer was diagnosed in 1.099 cases, gastric cancer in 11,702, cancer of the gastrointestinal tract in 9,270, rectal cancer in 4,670, cancer of the liver and bile ducts in 253, pancreatic cancer in 3,992, larynx cancer in 745, lung cancer in 7,608, prostate cancer in 10,835, renal cancer in 3,191, cancer of the bladder and urinary tract in 4,047, and malignant lymphoma in 3,336. The percentage of environmentally related, ie, preventable cancer was estimated after extrapolation to the 1979 incidence. According to the low estimate, 2,250 cases of cancer were attributable to smoking, 300 to alcohol consumption, and 150 to occupational exposure. (15 Refs) (In NOR)

14. AN INTRODUCTION TO THE EPIDEMIOLOGICAL STUDY OF ACUTE LEUKAEMIA IN SPAIN. ANALYSIS OF THE DATA AVAILABLE AND NATIONAL MORBIDITY AND MORTALITY SURVEY.

Loza J, Vines JJ, Giralt M
Honduras, 5, 1, Vitoria (Alava), Spain
Sangre (Barc); 26(5B):670-699 1981

An introduction to the epidemiological study of acute leukemia in Spain was carried out through a retrospective analysis of mortality and a national incidence inquiry. The evolution of the mortality rates for leukemia in Spain between 1901 and 1977 was studied, along with the disease distribution according to sex, age groups (since 1951), cytological types (since 1968), acute or chronic illness (since 1975), and the provincial spreading in two periods (1901-1940 and 1970-1978). The incidence of acute leukemia in Spain during 1979 and 1980 was 2.35 cases per 100,000 people, the expected number of cases being 2.365 per 100,000 people. Different distribution was found regarding age and sex between lymphoid and myeloid acute leukemia, and also with regard to their FAB-classification subtypes. Different geographical distribution was apparent as well, the highest frequency being found for Alava and Navarra. The validity of data obtained from the National Institute of Statistics is discussed, such data being reliable for the leukemia cases as a whole; about 50% of the cases had not been subclassified when assessing the subtypes. The necessity to continue this descriptive study is obvious, and it must be completed with prospective and/or retrospective investigations. (Author abstract) (26 Refs) (In SPA)

15. CANCER MORBIDITY IN THE USSR IN 1978.

Napalkov NP, Merabishvili VM, Tserkovnyi GF, Preobrazhenskaia MN
No affiliation given
Vopr Onkol; 27(9):3-23 1981

The incidence of various malignant tumors in the population of the Soviet Union in 1978 is reviewed. In 1978 there was a 1.2% increase in rate of overall cancer morbidity, compared with the rates for 1976 and 1977. Breast cancer moved from third place to second place in female cancer morbidity. Incidences of pharyngeal, mouth, rectal, skin, breast, lymphatic, and hematopoietic neoplasms increased in the urban popula-

tion, while incidences of these cancers in the rural population decreased or remained stable. Stomach, lung, and skin neoplasms had the highest incidences; this was true in both the urban and the rural populations. The next most frequent neoplasms in the urban population were breast, lymphatic, and hematopoietic, whereas the next most frequent in the rural population were cervix, esophageal, and lip. (9 Refs) (In RUS)

16. LUNG CANCER IN SLOVENIA AND ITS EPIDEMIOLOGICAL TRENDS. (STUDY FOR THE PERIOD FROM 1953 TO 1976).

Fortic B
Institut za Pljucne Bolezni in Tuberkulozo, Golnik, Yugoslavia
Plucne Bolesti Tuberk; 33(2/3):89-108 1981

The incidence of lung carcinoma (LC) in Slovenia was 9.1/100,000 in 1953, increasing to 36.1/100,000 in 1976; in the period 1967-1976, the increase was 41%. The incidence was much higher for the male population than for the female, and the ratio is continuing to increase; it was 5/1 in 1953 and 8/1 in 1976. In 1971, the incidence of LC surpassed that of tuberculosis. For the period 1953-1976, the incidence of all cancers increased 77%, while that of the LC increased 430%. The peak of LC was in the age group 55-59 yr in 1950, 60-64 yr in 1953, and 75-79 yr in 1976. Histologic types of LC were as follows: 53.9% epidermoid, 22.2% macrocellular, 14.8% adenocarcinoma, and 9.1% microcellular. The epidermoid type was most common in men (58.7%); adenocarcinoma in women (44.3%). In men 89.1% of LC patients were smokers; 69.7% of LC patients were nonsmokers. Slovenia had the highest incidence of LC in all Yugoslavia; Kosovo and Macedonia had the lowest. Due to increases in smoking, LC in Slovenia will be increasing. (54 Refs) (In SCR)

17. EPIDEMIOLOGICAL VICISSITUDES OF LARGE INTESTINE CANCER AND OUTLOOK FOR THE FUTURE.

Hirayama T
Dept. Epidemiology, Natl. Cancer Res. Center, Tokyo, Japan
Nippon Rinsho; 39(5):10-20 1981

Age-adjusted death rates for transverse colon cancer and rectal cancer increased from 1950-1978 in Japan. In 1950 and 1978, respectively, death rates (per 100,000 population) for transverse colon cancer were 1.7 and 3.8 for men and were 2.2 and 4.1 for women; those for rectal cancer were 2.8 and 3.8 for men and 2.5 and 3.0 for women, respectively. Analysis of annual transitions of death rates by age groupings showed that death rates due to transverse colon cancer increased from 1950-1978 in all age groups, and the trend was slightly higher for men than women; except for women 40-44 yr old, death rates due to rectal cancer remained the same or decreased slightly for both men and women. By region, both age-adjusted death rates and rates of chronic disease due to transverse colon cancer showed marked increases for both men and women, and rates of increase of chronic disease due to transverse colon cancer are now 2x those for lung cancer in both men and women. Autopsy studies from 1968-1978 showed that the incidence of cancers in the sigmoid flexure increased 3.1x in men and 2.6x in women. Cigarette smokers had high death rates due to large intestine cancer, and meat eaters had low rates of death due to large intestine cancer. Extrapolation of current data indicates that death rates due to large intestine cancer will continue to rise in the future. Preventative effects of fibrous foods need to be investigated as one aspect of research on changing this trend. (no Refs) (In JPN)

VIRAL FACTORS INVOLVING ENVIRONMENTAL AND OCCUPATIONAL EXPOSURE

18. HERPES SIMPLEX VIRUS AND ORAL CANCER.

Cohen WL
Maxillofacial Clinic, Univ. California, Los Angeles, CA, 90024
Dent Hyg; 55(11):31-39 1981

Herpes simplex viruses are reviewed and evidence for association between herpes simplex virus type I and oral cancer is discussed. First reports of an association between HSV-I and oral cancer in 1957 (in 6 elderly patients who developed carcinoma of the lip at a site of frequent herpetic infection) were anecdotal. No confirming reports were published and two clinicians found no such association in their clinical practice. Establishment of such an association is difficult because of the interaction of other factors or cofactors in development of oral cancer, including ethnic background or genetic predisposition, and chemical or thermal carcinogens such as alcohol and tobacco. Other cofactors may include gummatous lesions of syphilis, chronic irritants (poorly fitting dentures), and environmental factors such as air and water pollution. (22 Refs)

POTENTIAL CARCINOGENIC FACTORS RELATED TO MEDICAL TREATMENT

19. ORAL CONTRACEPTION AND CANCER RISK.

Genton CY
Leitender Arzt, Abteilung fur Gynakopathologie, Institut fur Pathologie der Universitat, Universitatsspital, CH-8091 Zurich, Switzerland
Schweiz Med Wochenschr; 111(46):1742-1748 1981

Oral contraception was introduced 20 yr ago and is today the most popular method of preventing pregnancy. Some undesirable side effects of these drugs are well known, while others are only suspected. Many investigations have been undertaken to elucidate whether or not the Pill has carcinogenic properties, and the present study describes the current state of knowledge on this question. At present no evidence exists to suggest that oral contraceptives have carcinogenic effects on the human breast o r genital organs. A causal relationship between use of these drugs and development of liver tumors is possible but far from proven. (Author abstract) (39 Refs) (In GER)

20. ROLE OF HORMONES INCLUDING DIETHYLSTILBESTROL (DES) IN THE PATHOGENESIS OF CERVICAL AND VAGINAL INTRAEPITHELIAL NEOPLASIA.

Robboy SJ, Truslow GY, Anton J, Richart RM
Dept. Pathology, Massachusetts General Hosp., Boston, MA, 02114
Gynecol Oncol; 12(2,part2):S98-S110 1981

Current status of hormone usage and its relation to cervical neoplasia is reviewed. Analysis of neoplastic squamous cell lesions involving young women exposed prenatally to DES led to the definition of dysplasia and severe dysplasia and their separation from squamous dysplasia. Cytologic, histologic description, and correlation with DNA nuclear content are defined. Examination of DES-exposed women has shown discrepancies between cytology and biopsy specimens and possible intrinsic changes of the metaplastic and dysplastic cells. Com-

parison of rates of dysplasia in DES-exposed and nonexposed individuals within several yr will provide whether or not dysplasia occurs more frequently in DES-exposed women. Varied analysis of exposed and unexposed subjects disclosed that occurrence of dysplasia was more frequent in older subjects and in those who had intercourse with increased numbers of partners. Between the development of squamous cell carcinoma and DES exposure no link has been established. Recent studies have not resolved yet whether oral contraceptive agents play a causative role in the development of cervical neoplasia. Microglandular hyperplasia can also arise in young females exposed prenatally to DES. (48 Refs)

PUBLIC POLICY INVOLVING ENVIRONMENTAL AND OCCUPATIONAL CARCINOGENS

21. RISK ASSESSMENT AND REGULATORY DECISION MAKING.

Munro IC, Krewski DR
Food Directorate, Health Protection Branch, Health and Welfare Canada, Ottawa, Ontario K1A OL2, Canada
Food Cosmet Toxicol; 19(5):549-560 1981

Quantitative risk assessment and the role of government in avoiding or reducing exposure to carcinogenic and other harmful agents are discussed. Current procedures for assessing human risk on the basis of toxicologic investigations in animal models are reviewed, and a critical appraisal of techniques for quantitative risk assessment is provided. The quantification of human risk on the basis of results of laboratory studies in animals should be approached with caution. In addition, regulators, industrialists, and the public should be informed of the magnitude of the uncertainty surrounding the risk assessment process. The integration of factors other than risk into the regulatory process, including information on health, economic and other benefits, is discussed. (73 Refs)

ANALYTICAL AND METHODOLOGICAL ASPECTS OF CANCER EPIDEMIOLOGY

22. THE OCCUPATIONAL AND ENVIRONMENTAL HEALTH HISTORY.

Goldman RH, Peters JM
(c/o Occupational Health Program) Dept. Physiology, Harvard Sch. Public Health, 665 Huntington Ave., Boston, MA, 02115
JAMA; 246(24):2831-2836 1981

Occupational and environmental diseases frequently masquerade as routine medical disorders. Yet environmental factors rarely enter into the clinician's differential diagnosis. This article provides a sequence of steps that can be used by the practicing physician for detecting occupational diseases: Step 1: Routine screening questions for all patients (List of job titles? Exposure to fumes, dusts, chemicals, loud noise, or radiation? Temporal relationship of the chief complaint to activities at work or at home?). Step 2: Consideration of sources of exposure (workplace or home surroundings). Step 3: Identification and handling of the hazardous agent. Step 4: Follow-up, consultation, and resolution of the problem. Equipped with this approach, the clinician can play an important role in the detection and prevention of occupational- and environmental-related diseases. (Author abstract) (20 Refs)

23. BIOLOGICAL MONITORING OF EXPOSURE TO CARCINOGENS.

Vainio H, Sorsa M, Rantanen J, Hemminki K, Aitio A
Tyoterveyslaitos, 00290 Helsinki 29, Finland
Duodecim; 97(15):1141-1152 1981

The authors discuss the various theoretical and practical alternatives presently available for controlling occupational exposure to genotoxic substances and the tumors, deformities, congenital defects and fertility loss that can result. They also outline a threefold line of defense: (1) determination of the fact of exposure (detection of substance or its metabolites in organism, urine mutagenicity, protein and nucleic acid alkylation products); (2) detection of early biologic effects (chromosome alterations, sister chromatid exchange in lymphocytes, changes in sperm cell morphology, fetoproteins); (3) diagnosis and treatment of illnesses if preventive measures have not proved successful in individual cases. Most of the procedures described are still in the experimental stage, and individual differences cause variation both in the degree of exposure and sensitivity to the amount of exposure. (61 Refs) (In FIN)

GENERAL AND MISCELLANEOUS FACTORS

24. CHEMICAL AND ENVIRONMENTAL AGENTS IN GASTROINTESTINAL CARCINOGENESIS.

Deschner EE, De Cosse JJ, Sherlock P
Lab. Digestive Tract Carcinogenesis, Memorial Sloan-Kettering Cancer Center, 1275 York Ave., New York, NY, 10021
Clin Gastroenterol; 10(3):755-771 1981

A review is presented of incidence, risk factors, and chemical and environmental agents involved in induction or promotion of cancer of the gastrointestinal system. Presence of ingested agents in foods and experimental and clinical evidence for cancer causation are discussed. Carcinogenesis is considered with respect to the esophagus (nitrosamines, mycotoxins, promotional factors), stomach (nitrites and polycyclic hydrocarbons, mycotoxins, agricultural products, polychlorinated biphenyls, experimental carcinogens), and large bowel (nitrites, aflatoxins, diet, carrageenan, chemical carcinogens: nitroso compounds, biphenyls, symmetrical 1,2-dialkylhydrazines and azoalkanes and azoxyalkanes). Chemicals with known gastric tumor induction capability in animals are tabulated from published reports. (74 Refs)

25. EPIDEMIOLOGY OF CANCER IN CHILDHOOD.

Li FP, Bader JL
Sidney Farber Cancer Center, Boston, MA
Hematology of Infancy and Childhood Volume II. Nathan DG and Oski FA, ed. Philadelphia, W. B. Saunders Company, 774 pp., 1981.

The incidence of malignant neoplasms in children less than 15 yr old in the United States is discussed. Of 7,168 new cases reported in 1970, leukemia was the most frequently occurring cancer (2,357) followed by tumors of the CNS (1417), lymphoma (787), neuroblastoma (540), soft tissue sarcoma (463), Wilms' tumor (450), bone tumor (323), retinoblastoma (197), liver tumor (100), ovarian tumor (77), testicular tumor (57), and others (400). Cancer risk factors discussed are the environ-

mental carcinogens ionizing radiation, drugs, chemicals, and infectious agents. Host susceptibility includes single-gene diseases, chromosomal disorders, familial cancers, and cancer and birth defects. (288 Refs)

26. RETHINKING THE ENVIRONMENTAL CAUSATION OF HUMAN CANCER.

Higginson J
International Agency Res. on Cancer, 150 cours Albert Thomas, 69372 Lyon Cedex 2, France
Food Cosmet Toxicol; 19(5):539-548 1981

Epidemiologic studies concerning the etiology of environmental cancers are reviewed. The results of a number of studies strongly suggest that most human cancers are related to environmental factors and not to racial or hereditary factors. The results of the author's survey in South Africa further suggested that 'way of life' was of major significance for many cancers, especially those of the gastrointestinal tract and endocrine-dependent organs. Although there are many factors involved in its etiology, cancer may be prevented by controlling a single predominant factor. Only a small part of the total cancer burden can be directly related to ambient environmental pollution, and a number of other environmental factors, particularly diet, must be considered for the majority of environmental cancers. Although the role of dietary factors in promotion and enzyme induction of cancers is well established in laboratory animals, their role in man is much less clear. Most epidemiologists do not consider human environmental cancers in terms of single causes; human cancers for which there is evidence of multistage and multifactorial origin include lung, esophagus, liver, stomach and large intestine, breast and endometrium, Burkitt's lymphoma, and nasopharyngeal carcinoma. (106 Refs)

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NOTICE OF CURRENT REVIEWS: CARCINOGENESIS

As an additional service to readers of carcinogenesis (CK series) CANCERGRAMS, each issue now provides a bibliography of review articles of interest to carcinogenesis researchers, selected from journals screened for that month's CANCERGRAMS.

CHEMICAL CARCINOGENESIS

1. CHEMICAL CARCINOGENESIS.
Farber E
Dept. Pathology, Univ. Toronto, 100 College St., Toronto, ON M5G 1L5, Canada
N Engl J Med; 305(23):1379-1389 1981

2. N-HEXANE AND ITS TOXICOLOGIC EFFECTS. A REVIEW.
Jorgensen NK, Cohr KH
Harevaenget 44, DK-4200 Slagelse, Denmark
Scand J Work Environ Health; 7(3):157-168 1981

3. SAFROLE: ITS METABOLISM CARCINOGENICITY AND INTERACTIONS WITH CYTOCHROME P-450.
Ioannides C, Delaforge M, Parke DV
Dept. Biochemistry, Univ. Surrey, Guildford, Surrey GU2 5XH, England
Food Cosmet Toxicol; 19(5):657-666 1981

RADIATION CARCINOGENESIS

4. CARCINOGENIC, MUTAGENIC, TERATOGENIC WORKSHOP.
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Institut fur Sozial- und Praventivmedizin, Universitat Zurich, Gloriastrasse 32 B, 8006 Zurich, Switzerland
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Nasemann T
Univ.-Hautklinik Eppendorf, Martinistr. 52, D-2000 Hamburg 20, W. Germany
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ENVIRONMENTAL AND OCCUPATIONAL CARCINOGENESIS

SERIES CK02 No. 82/05 MAY, 1982

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ENVIRONMENTAL FACTORS: POLLUTION

1. EPIDEMIOLOGIC STUDY OF DRINKING WATER CHLORINATION AND WISCONSIN FEMALE CANCER MORTALITY.

Young TB, Kanarek MS, Tsiatis AA
Dept. Preventive Medicine, Univ. Wisconsin, 504 North Walnut St., Madison, WI, 53706
JNCI; 67(6):1191-1198 1981

The association between gastrointestinal, urinary tract, brain, lung, and breast cancer mortality and drinking water trihalomethane exposure, as estimated by av daily chlorine dosage of water source 20 yr past, was investigated for Wisconsin white females by use of a death certificate-based case-control study design. A total of 8,029 cancer deaths and 8,029 controls (noncancer deaths) matched on county of residence, year of death, and age were taken from mortality records of 28 counties for the years 1972-77. Data on characteristics and treatment of municipal water supplied to the residences of cases and controls were obtained from questionnaires sent to the water superintendents of the 202 waterworks associated with the sample. By the use of logistic regression analysis, odds ratios for site-specific cancer death associated with high, medium, and low chlorine-dosed water as compared to unchlorinated water exposure were determined; the control variables were urbanicity, marital status, and occupation. With the exception of cancer of the colon, no anatomic cancer site was significantly associated with any chlorine dose exposure category. For colon cancer, odds ratios of 1.51 [95% confidence interval (CI) = 1.06-2.14], 1.53 (95% CI = 1.08-2.0) and 1.53 (95% CI = 1.11-2.11) were obtained for high-, medium-, and low-dose chlorination, respectively (p less than or equal to 0.02). For colon cancer cases and controls exposed to water sources affected by rural runoff, odds ratios of 3.30 (95% CI = 1.45-7.48), 3.60 (95% CI = 1.57-8.26), and 2.74 (95% CI = 1.10-6.88) were observed for high, medium, and low chlorine dosages 20 yr past (p less than 0.025). (Author abstract) (40 Refs)

2. THE CHLORINATION QUESTION: HIGHLIGHTS OF THE RECENT CONFERENCE IN CALIFORNIA.

Hileman B
No affiliation given
Environ Sci Technol; 16(1):15A-18A 1982

Health problems associated with water chlorination, including alternative water disinfectants, epidemiological and carcinogenicity studies, cost benefit analysis, the chemistry of chlorination, and effects on aquatic ecosystems are discussed. Alternative disinfectants include chlorine dioxide (ClO2), ozone, and chloramines. ClO2 forms few chlorinated products. One disadvantage is production of the toxic chlorite ion which may possess antithyroid activity. Chloramines are thought to be mutagenic; ozone is expensive and short lived in water systems. Toxicological effects of chlorine have not been carefully studied, even though chlorine byproducts such as trihalomethanes, chlorinated phenols, and haloacetonitriles are possible carcinogens or mutagens. One study suggests a causal relationship between chlorinated drinking water and rectal, bladder, and colon cancer. A new method for measurement of residual halogens, which can detect less than 1 ppb, will allow closer monitoring of water supplies. Organic materials in natural waters are responsible for most of the observed reactions of chlorine with surface waters. Widespread use of chlorine as a water and food disinfectant warrants continued research into its b eneficial and harmful effects. (no Refs)

3. EMPIRICAL TEST OF THE ASSOCIATION BETWEEN GROSS CONTAMINATION OF WELLS WITH TOXIC SUBSTANCES AND SURROUNDING LAND USE.

Greenberg M, Anderson R, Keene J, Kennedy A, Page GW, Schowgurow S
Dept. Urban Studies, Rutgers Univ., New Brunswick, NJ, 08903
Environ Sci Technol; 16(1):14-19 1982

The presence of organic pesticides, light chlorinated hydrocarbons (LCH), or heavy metal contamination in well water of horticultural, industrial, or commercial land areas in New Jersey was tested empirically. Wells with high pesticide levels were located in forest or agricultural areas, while those with high levels of LCH were in urban areas. Land use profiles of the heavy-metal contaminated wells were not distinct from the clean group. Land use surrounding groundwater sampling sites can be used to differentiate between types of groundwater contamination. (11 Refs)

4. REDUCTION OF HUMAN EXPOSURE TO ENVIRONMENTAL N-NITROSO COMPOUNDS.

Preussmann R, Spiegelhalder B, Eisenbrand G
Inst. Toxicology and Chemotherapy, German Cancer Res. Center, Im Neuenheimer Feld 280, 6900 Heidelberg, W. Germany
ACS Symp Ser; 174():217-228 1981

The complex pattern of human exposure to environmental N-nitroso compounds is summarized. Recent results in three areas (N-nitrosodimethylamine in beer; volatile N-nitrosoamines in baby nipples and pacifiers; occupational exposure in the rubber industry) where significant reductions of human exposure have been achieved are presented. Of the total daily intake of N-nitrosodimethylamine (NDMA) 0.7 ug/day results from the consumption of beer. NDMA is formed during kilning of green malt. Reduction of NDMA in malt was achieved by sulfuring during the first 10 hr. Nitrosamine contamination of rubber products originates from amine-containing accelerators and stabilizers used in the vulcanization process. In W. Germany a regulation is being discussed allowing not more than 10 ppb of preformed nitrosamines and 200 ppb of nitrosatable amines in migrates of nipples and pacifiers. In a tire factory nitrosodiphenylamine was substituted by cyclohexylthiophthalimid to remove the major nitrosating agent. Peroxides as accelerators can be used to solve the nitrosamine problem. (5 Refs)

5. A PROSPECTIVE ANALYSIS OF THE POTENTIAL RISK ASSOCIATED WITH INHALATION OF AFLATOXIN-CONTAMINATED GRAIN DUSTS.

Baxter CS, Wey HE, Burg WR
Dept. Environmental Health, Univ. Cincinnati, Cincinnati, OH, 45267
Food Cosmet Toxicol; 19(6):765-769 1981

A prospective analysis of the potential risk of aflatoxins inhaled as contaminants of grain dusts indicated a significant risk for such exposure. Although the exact risk is impossible to determine at present, the large numbers of workers so exposed makes further investigation of the effects of afla toxin inhalation imperative. (43 Refs)

ENVIRONMENTAL FACTORS: COMMERCIAL PRODUCTS

6. OCCUPATIONAL CANCER: EXPERIENCE IN ONTARIO.

Chovil AC, McCracken WJ, Dowd EC, Stewart C, Burton DF, Dyer DW
(c/o McCracken) Medical Services Div., Workmen's Compensation Board of Ontario, 2 Bloor St. E, Toronto, Ontario M4W 3C3, Canada
Can Med Assoc J; 125(11):1237-1241 1981

This paper reviews the experience of the Workmen's Compensation Board of Ontario in identifying cases of cancer that could be attributed to occupational hazards. Workers' claims for compensation are allowed if there is reasonable medical evidence that their cancer was caused by exposure to risk factors associated with their occupation. Details of the types of cancer associated with specific carcinogens or fields of employment are discussed. About 50% of the cases were related to exposure in particular industrial operations that functioned for relatively brief periods. The number of deaths from cancer identified as being caused by occupational factors is compared with the total for cancer from all causes in Ontario during the period 1971 through 1975. Although all workers eligible for compensation may not have been identified, the data suggest that less than 1% of cancer is presently caused by occupational factors. (Author abstract) (13 Refs)

7. OVARIAN EPITHELIAL CANCER AND CHEMICAL CARCINOGENESIS.

Venter PF
Dept. Obstretries and Gynecology, Univ. Orange Free State, Bloemfontein, South Africa
Gynecol Oncol; 12(3):281-285 1981

Ovarian cancer is the most common fatal gynecological malignancy and is on the increase in industrialized countries. At this moment it is almost impossible to identify the high-risk patient. This cancer could be initiated by a chemical carcinogen via the vagina, uterus, and tubes and the substance promoting the cancer could be steroid-rich antral fluid from ruptured follicles. There is ample clinical evidence available for migration of chemical substances from the vagina to the peritoneal cavity and ovaries. By use of the radionuclide 99mTc-HAM upward migration was also demonstrated. Many different chemical substances are regularly used in the vulvo-vaginal areas and some of these could be implicated in carcinogenesis. (Author abstract) (31 Refs)

ENVIRONMENTAL AND OCCUPATIONAL FACTORS: RADIATION

8. CARCINOGENIC RISK OF EXPOSURE TO RADON DAUGHTERS ASSOCIATED WITH RADON SPAS.

Uzunov I, Steinhausler F, Pohl E
Faculty Physics, Univ. Sofia, BG-1126 Sofia, Bulgaria
Health Phys; 41(6):807-813 1981

Water, containing high concentration of 222Rn naturally or artificially, is used worldwide for therapeutical treatment of different diseases. In some radon spas people use the mineral water source without any limitation. High concentration of randon and its short-lived decay products has been measured indoors in radon treatment centers and even private houses. No recommendations from international organizations deal with the potential risk for the patients and only a few countries apply radiation protection measures for the personnel. The radioactive environment of two different radon spas is described. It is demonstrated that in both cases not only the patients, but also the staff, and even the general public of such a spa (including children and youths) are exposed to increased dose levels, mainly due to inhalation of radon decay products. Carcinogenic risks are assessed, taking into consideration age dependence of dose and risk. Risk data was derived from epidemiological studies of uranium miners, since no such data are available for inhabitants of radon spas. The results show that in some cases the risk is unacceptably high. The calculations presented can be also useful for the assessment of risk in other environments, such as in dwellings with increased content of atmospheric randon daughters, eg due to the building material used. (Author abstract) (37 Refs)

9. A STUDY OF THE MORTALITY OF CORNISH TIN MINERS.

Fox AJ, Goldblatt P, Kinlen LJ
Medical Statistics Div., Office of Population Censuses and Surveys, London, England
Br J Ind Med; 38(4):378-380 1981

Increased mortality from cancer of the lung has been found in several studies of miners exposed to high levels of radioactivity in underground air. In view of their exposure to raised levels of radiation, we have studied the mortality of a group of men recorded as Cornish tin miners in 1939. Using occupational description, a crude classification of exposure was derived for these miners. The meaningfulness of this classification was supported by differences in mortality for silicosis and silicotuberculosis. A twofold excess of cancer of the lung was found from underground miners, while for other categories mortality from this cause was less than expected. This supports the findings of previous studies on exposure to radon and its daughters. An excess of cancer of the stomach was also observed among underground miners. (Author abstract) (15 Refs)

10. MALIGNANT NEOPLASMS AMONG ATOMIC BOMB SURVIVORS FOLLOWING RADIATION THERAPY.

Pinkston JA, Antoku S, Russell WJ
(c/o Russell), Radiation Effects Res. Foundation, 5-2 Hijiyama Park, Minami-ku, Hiroshima 730, Japan
Acta Radiol Oncol Radiat Phys Biol; 20(4):267-271 1981

A second follow-up survey for radiation therapy exposure among a fixed cohort of A-bomb survivors originally numbering 20,000 persons identified 55 more who had received radiation therapy, and 7 more therapy-associated malignancies. In the previous and present investigations, 12 postirradiation malignancies were identified among 190 cohort members (6%) who received radiation therapy. This investigation underscored the necessity for documenting exposures to ionizing radiation for medical reasons, especially exposures incurring relatively high doses, among persons at relatively high risk of developing neoplasms, such as A-bomb survivors, and in malignancy epidemiology to exclude bias in estimates of risk. (Author abstract) (12 Refs)

OCCUPATIONAL FACTORS: SPECIFIC AGENTS OR INDUSTRIES

11. OCCUPATIONALLY RELATED CARCINOGENESIS.

Waite DE
Dept. Family Medicine, Fee Hall, Michigan State Univ., East Lansing, MI, 48824
JAOA; 80(5):350-355 1981

The epidemiology of industrial carcinogenesis is discussed. The association between cancers of the urinary bladder and occupational exposure to workers in the German coal tar industry was first made in 1895 by Rehn. Cancer of the nose associated with chromate production was reported in 1890, and lung cancer from the same exposure in 1912. During the 1940s and 1950s the marked expansion of industry led to a significant increase in the number of observed relationships between occupational exposure and subsequent development of cancer. The Occupational Safety and Health Administration (OSHA), established in 1970, determines standards for exposure to carcinogens in industrial operations. OSHA currently exercises stringent controls over 19 specific chemicals which it labels as 'cancer specific agents.' Mechanisms of chemical carcinogenesis, primary carcinogens, and secondary carcinogens are also discussed. (42 Refs)

12. MORTALITY AMONG RUBBER WORKERS. IV. GENERAL MORTALITY PATTERNS.

Delzell E, Monson RR
Dept. Epidemiology, Harvard Sch. Public Health, 677 Huntington Ave., Boston, MA, 02115
JOM; 23(12):850-856 1981

This report describes the relationship between mortality patterns seen in a large group of rubber workers and several factors, including duration of employment, years since starting work, age and employment status (active vs terminated). Observed numbers of deaths among 15,643 white male production workers were compared to those expected based on mortality rates among U.S. white males. There were consistent and substantial deficits in deaths among active workers. Among terminated employees, there were twofold or larger excesses in deaths from all causes studied during the first few years immediately following termination. For most causes, the observed excesses were limited to men who left work before age 65, and no increased mortality occurred after the fifth post-termination year. However, for causes of death thought to be related to occupational exposures, excesses among terminees persisted beyond this period. Mortality patterns observed for a disease causally associated with employment may depe on its induction period and its age-at-death distribution. These aspects of the disease's natural history may in turn influence survival as an active employee. Because it may not be possible to separate the effects of these factors, it is prudent in evaluating occupational hazards to include the experience of all employees regardless of active or terminated status and to employ analyses that consider both duration of employment and some measure of induction period. (Author abstract) (10 Refs)

13. AIR POLLUTION BY ASBESTOS AND OTHER FIBROUS DUSTS: A REVIEW OF THE WHOLE PROBLEM.

Lohrer W
Umweltbundesamt, Bismarckplatz 1, D-1000 Berlin, W. Germany
Staub; 41(10):387-395 1981

Air pollution problems caused by asbestos dust and other fibrous dusts are reviewed. Asbestos dust has been linked to as many as 2/3 cases of mesothelioma as well as to carcinoma of the lung. Asbestos fibers are universally present in the atmosphere in concentrations of 0.03-2,000 fibers/liter of air. The highest concentrations are found where asbestos-containing products are used in dust-producing situations, such as cutting, abrasion, transporting, weathering, and even disposal. No safe level of exposure has been found. Common sources of asbestos dust include asbestos cement used in building construction, drum brake linings, and artificial flooring. The carcinogenic effect of asbestos is related to the physical, rather than chemical, characteristics of the dust. Carcinogenicity begins with fiber length of over 2 microns (um) and diameter of under 1 um. Some artificial fibers, such as various forms of glass fibers, have similar carcinogenic properties. The principle method of reducing cancer risk due to asbestos is the substitution of other materials for asbestos. Such substitution requires overcoming serious economic problems. (32 Refs) (In GER)

14. MESOTHELIOMA IN A FACTORY USING AMOSITE AND CHRYSOTILE ASBESTOS.

Acheson ED, Gardner MJ, Bennett C, Winter PD
Environmental Epidemiology Unit, Level F, South Lab/Path Block, Southampton General Hosp., Southampton, England
Lancet; 2(8260):1403-1406 1981

Five deaths have been certified as due to mesothelioma (4 pleural and 1 peritoneal) in men who worked at a London factory where insulation board has been manufactured since 1946 from a mixture of amosite asbestos and chrysotile asbestos. It seems reasonable to relate four of these cases to work at the factory. Amosite has been the fiber predominantly in use and seems likely to be the cause of the tumors. (Author abstract) (19 Refs)

15. OCCUPATIONAL EXPOSURE TO ASBESTOS FIBERS RESULTING FROM USE OF ASBESTOS GLOVES.

Samimi BS, Williams AM
Univ. Wisconsin-Parkside, Kenosha, WI, 53141
Am Ind Hyg Assoc J; 42(12):870-875 1981

Health hazards were assessed for use of asbestos gloves by collecting personal and area air samples during simulated laboratory procedures in a ventless isolation chamber and in a biology preparation room, and during the actual work day of five laboratory workers. For 176 air samples collected from the isolation chamber during asbestos glove use, the mean time weighted av (TWA) concentrations of airborne fibers greater than 5 micrometers ranged from 0.95-11.74 fibers/cc. Minimum and max values were 0.61 and 16.5 fibers/cc. Structural integrity of the gloves, determined by age and/or extent of usage, was the main factor affecting fiber emission magnitude. Magnitude of fiber emission from worn gloves decreased with increased surface soiling. TWA concentration of airborne fibers were considerably lower in samples collected from the biology preparation room. TWA concentration values for breathing zone samples ranged from 0.05 to 0.61 fibers/cc with normal workload and from 0.27 to 1.25 fibers/cc with heavy workload. Thirteen personal and area samples collected from actuarial workplaces of five workers showed max and minimum TWA concentration values of 2.93 and 0.07 fibers/cc for breathing zone samples and 0.74 and 0.04 fibers/cc for area samples. Results from hand contamination studies revealed significant number of fibers on the hands, with values of 741-2,860 fibers/square cm of hand surface area for seven sample collected immediately after glove removal. Results suggested that use

of asbestos gloves exposes the wearer to potentially hazardous levels of asbestos. (12 Refs)

16. ETHYLENE OXIDE (ETO): EVIDENCE OF CARCINOGENICITY.

Coene RF
National Inst. for Occupational Safety and Health, Cincinnati, OH
Vet Hum Toxicol; 23(6):439-443 1981

The potential of ethylene oxide (EtO) as an occupational carcinogen is discussed. Production, use, potential for occupational exposure, evidence of carcinogenicity in experimental animals, mutagenic and reproductive effects, epidemiologic evidence of cancer in humans, exposure standards, and guides are reviewed. Results in sub-mammalian test systems (Salmonella typhimurium, Escherichia coli, Neurospora crassa, Tradescantia paludosa, and Drosophila melanogaster) have indicated mutagenic properties of EtO. EtO has caused statistically significant increases in mononuclear cell leukemia in female Fisher 344 rats. Among male Fisher 344 rats, EtO induced peritoneal mesothelioma originating in the testicular mesothelium. Investigation of possible adverse effects (analysis of chromosomal aberrations in lymphocytes for all exposed workers and sperm analysis for the men) has shown higher incidence of aberration and sister chromatid exchange among workers exposed to EtO. Cases of peripheral neuropathy among exposed workers have been reported. The present standard (1-10 ppm as 8 hr time-weighted av) may need to be reexamined; its adoption preceded recognition of the carcinogenic potential of EtO and was intended only to protect against acute and nonmalignant chronic effects. (no Refs)

17. THE MORTALITY EXPERIENCE OF ARMY WORLD WAR II CHEMICAL PROCESSING COMPANIES.

Norman JE, Robinette CD, Fraumeni JF
Medical Follow-up Agency, Natl. Res. Council, 2101 Constitution Ave., Washington, DC, 20418
JOM; 23(12):818-822 1981

Tetrachloroethane was used by the Army during World War II in the impregnation of clothing for protection against mustard gas. Thirty-nine chemical processing companies were formed: 10 used tetrachloroethane as a solvent for the clothing impregnite and the remainder used a water solvent process. An age-specific analysis of mortality in relation to race, rank, and military occupational specialty (MOS) was performed in which observed numbers of deaths from principal cause groups were compared with those expected according to US standard mortality rates. Overall cancer mortality for 1,099 white males with tetrachloroethane exposure was 1.26 times that of 1,319 men not involved in the impregnation process. The risks for leukemia, lymphoma, and cancers of the genital organs were moderately elevated, but the numbers were small and no significant excesses were observed. (Author abstract) (17 Refs)

18. LUNG CANCER AMONG WELDERS.

Beaumont JJ, Weiss NS
Industrywide Studies Branch, Div. Surveillance, Natl. Inst. Occupational Safety and Health, 4676 Columbia Parkway, Cincinnati, OH, 45226
JOM; 23(12):839-844 1981

Deaths from lung cancer among 3,247 welders in western Washington during the period 1950 through 1976 were identified. Relative to those among men of comparable age and race in the population as a whole, lung cancer mortality rates among the welders were elevated by 32% ($p = 0.06$). When the analysis was restricted to the period beginning 20 yr after first employment, the excess was 74% (p less than 0.001). An excess was also found when welders were compared to nonwelders in the same union: the attributable risk was 23.1 per 100,000 per yr. A review of 11 published studies showed that most demonstrate an excess risk, with 6 of the 11 showing an excess in the range of 30 to 50%. (Author abstract) (20 Refs)

19. EPIDEMIOLOGICAL STUDY OF WORKERS ENGAGED IN THE MANUFACTURE OF CHROMIUM COMPOUNDS.

Satoh K, Fukuda Y, Torii K, Eng M, Katsuno N
Nippon Chemical Industrial Co., Ltd., 9-15-1 Kameido, Koto-ku, Tokyo 136, Japan
JOM; 23(12):835-838 1981

This is a study of the mortality of individuals engaged in the manufacture of chromium compounds (chromium work) at a plant in Tokyo, Japan, for 1 or more yr. Morbidity data and results of liver and kidney function tests were also reviewed. The subjects of the mortality study were 896 males, who engaged in the chromium work between 1918 and 1975. Workers who died or retired or left the work for other reasons before the end of the follow-up period (1978) and for whom the necessary data were obtainable are included. When compared with Japanese males, this group of workers was found to have a standard mortality ratio for respiratory cancer of 9.2, which indicates an excess risk. No excess risk of death was indicated for cancer in other organs of the body or for other diseases. No significant differences in morbidity, which would indicate that the exposed group contracted any specific diseases, including liver and kidney disorders, more easily than did the control group, were found. (Author abstract) (11 Refs)

20. RESPIRATORY CANCER IN A COHORT OF NICKEL SINTER PLANT WORKERS.

Chovil A, Sutherland RB, Halliday M
Medical Branch, Workmen's Compensation Board, Toronto, Canada
Br J Ind Med; 38(4):327-333 1981

A study was undertaken of a cohort of nickel refinery workers from a sinter plant that operated from 1948 to 1962. A complete follow-up of the 495 workers has been carried out by searching death records and other measures. Incident cases known to the Workmen's Compensation Board of Ontario have been included. Fifty-four cases of lung cancer and 8 of sinus cancer (including 2 in men who subsequently developed primary lung cancer) were located. The risk of lung and sinus cancer was much higher in the earlier days of operation of the plant, with an incidence rate of over 40% for those employed in the first year of operation. The dose-response relationship has been examined by regressions of standardized mortality ratios and standardized incidence ratios (SIR). The SIR suggests that the risk doubled at levels of exposure of 12 mo (6 mo in the earlier yr). (Author abstract) (14 Refs)

21. PILOT STUDY OF THE QUANTIFICATION OF THE EFFECT OF LEAD IN THE CERAMIC AND GLASS INDUSTRIES.

Schaller KH, Weite D, Schiele R, Weissflog S, Mayer P, Valentin H
Institut fur Arbeits- und Sozialmedizin und Polyklinik fur, Berufskrankheiten Universitat Erlangen-Nurnberg, Schillerstrasse 25/29, 8520 Erlangen, W. Germany
Zentralbl Arbeitsmed Arbeitsschutz Proph; 31(11):442-452 1981

Initial findings of levels of lead in blood, and levels of delta-aminolevulinic acid in urine, in workers from ceramic and glass industries are reported. Glass workers had higher levels of lead in blood than ceramic workers. Among women differences between the industries were less distinct. Over a 2-yr period levels declined, indicating improvement in working conditions. (12 Refs) (In GER)

22. OCCUPATIONAL BLADDER CANCER AND CIGARETTE SMOKING IN WEST YORKSHIRE.

Glashan RW, Cartwright RA
(c/o Cartwright) Yorkshire Regional Cancer Organisation, Cookridge Hosp., Leeds LS16 6OB, England
Br J Urol; 53(6):602-604 1981

This paper reports the preliminary findings of a case-controlled study of bladder cancer in parts of West Yorkshire. The first 991 cases have been analyzed, and the results of the occupa tional exposure for five occupations are reported. There is an increased risk of bladder cancer associated with smoking cigarettes in both males and females. These results take both the age and the year of diagnosis into account and are statistically significant. Chemical industry workers and printers have been shown statistically to have a high risk ratio, whereas leather workers, hairdressers and dye-users have a statistically insignificant risk ratio. For process workers in the dye manufacturing industry, the length of service is significantly correlated with the risk of bladder cancer; so is the age at which a man first becomes a process worker. (Author abstract) (12 Refs)

EPIDEMIOLOGICAL FINDINGS INVOLVING SPECIFIC AREAS

23. LUNG CANCER MORTALITY AND SMOKING HABITS: MEXICAN-AMERICAN WOMEN.

Holck SE, Warren CW, Rochat RW, Smith JC
(c/o Warren) Family Planning Evaluation Div., Center for Health Promotion and Education, DHHS/PHS/CDC, Atlanta, GA, 30333
Am J Public Health; 72(1):38-42 1982

Lung cancer mortality was reported to be higher among Mexican-American women as compared with Anglo women from 1950 until 1970; however, smoking habits of Mexican-American women have not been adequately described. This study updates lung cancer mortality data in Texas, describes smoking patterns of 1,255 Mexican-American women from a household survey in the four states bordering Mexico, and compares these findings to a reference group of Anglo women residing in the same area. In 1970, lung cancer mortality rates were similar for Mexican-American and Anglo women in Texas; however, by 1974-1976 Mexican-American women in Texas had a 40% lower rate than Anglo women and by 1979, a 46% lower rate. In our 1979 survey results, Mexican-American women reported lower levels of smoking, both in prevalence and amount smoked, as compared with Anglo women. The lower prevalence was reported for all social and demographic categories examined. The relatively low lung cancer mortality rate is most likely due to relatively low levels of cigarette smoking among Mexican-American women. Based on the trend in lung cancer deaths and our survey findings, we would anticipate a continuing low level of lung cancer mortality among Mexican-American women. (Author abstract) (16 Refs)

24. TRENDS IN THE ANATOMICAL DISTRIBUTION OF COLORECTAL CARCINOMA IN HAWAII, 1960-1978.

Nomura AM, Kolonel LN, Hinds MW
Epidemiology Program, Cancer Center Hawaii, Univ. Hawaii, 1236 Lauhala St., Honolulu, HI, 96813
Dig Dis Sci; 26(12):1116-1120 1981

The incidence of colorectal adenocarcinoma increased in the five major ethnic groups in Hawaii, but more in men than women. The highest rates were in the Chinese and Japanese. The site-specific time trend patterns revealed that the greatest increase occurred in rectosigmoid cancer, followed by cancer of the sigmoid colon and the transverse descending colon. Rectal cancer had minimal changes in rats over time. The comparison of site-specific rates between the Japanese in Hawaii and Miyagi Prefecture, Japan, showed that the occurrence of cancer of the rectosigmoid, sigmoid, and transverse descending colon was far greater in Hawaii than Miyagi with minimal differences in the rates of rectal cancer. The findings from this study indicate that the separate anatomical locations of colorectal cancer probably have some distinct etiologies that need further investigation. (Author abstract) (5 Refs)

25. EPIDEMIOLOGY OF GASTRIC CANCER IN CHILE.

Armijo R, Detels R, Coulson AH
Div. Epidemiology, Public Health Sch., Univ. California, Los Angeles, CA
Bol Of Sanit Panam; 91(4):362-368 1981

After Japan, Chile has the highest gastric cancer mortality rate (GCM) in the world. GCM is lowest in northern and southern Chile (20/100,000) and highest in the middle region (Maule, 52.5/100,000). Levels of nitrates and nitrites have been studied in vegetables, saliva, and urine of children in different parts of Chile. (9 Refs) (In SPA)

26. THE EARLY CHANGES IN THE DEVELOPMENT OF BLADDER CANCER IN PATIENTS EXPOSED TO KNOWN INDUSTRIAL CARCINOGENS.

Glashan RW, Wijesinghe DP, Riley A
Dept. Urology, Huddersfield Royal Infirmary, Lindley, Huddersfield, Yorkshire, England
Br J Urol; 53(6):571-577 1981

In the Huddersfield district many people have been exposed to industrial carcinogens as a result of their occupation. An exfoliative urine cytology screening program has been in operation for many years so that patients with the early changes associated with these carcinogens are referred for urological investigation at a very early stage in the disease. A description of the development of urothelial dysplasia, carcinoma in situ and transitional cell carcinoma is presented, with particular reference to the urine cytology, histological features of mucosal biopsies and cystoscopic appearances of the bladder. Changes in the collagen fibers in the basement membrane are also described. (Author abstract) (8 Refs)

27. MALE BREAST CANCER IN ISRAEL: SELECTED EPIDEMIOLOGICAL ASPECTS.

Steinitz R, Katz L, Ben-Hur M
Israel Cancer Registry, 2 King David St., 94100 Jerusalem, Israel
Isr J Med Sci; 17(9/10):816-821 1981

The 17-yr incidence of male breast cancer was analyzed from data of the Israel Cancer Registry for Jews and non-Jews, and for the Jewish subgroups of European/American-born and Asian/African-born. The 187 observed cases among Jewish males in Israel were compared with the 194 cases reported in the US Third National Cancer Survey and with female breast cancer rates for the same period. Results show that the dependence of male breast cancer (MBC) on the female rate seems to exist in both countries. The dis puted observation of a higher rate of MBC among Jews is supported by the higher rates of MBC in Israel than in the USA. Data on the laterality and histological features of MBC are presented. The series included eight cases among non-Jews (Arabs). The ongoing survey of the Israel Cancer Registry revealed four families in which both husband and wife had breast cancer and one family with breast cancer in both father and son. (Author abstract) (25 Refs)

28. EPIDEMIOLOGICAL REVIEW OF BREAST CANCER IN ISRAEL.

Katz L, Steinitz R, Sela T
Israel Cancer Registry, Ministry Health, 20 King David St., 94100 Jerusalem, Israel
Isr J Med Sci; 17(9/10):810-815 1981

Breast cancer is the most common malignant disease in women in Israel. Approx 1,000 new cases are diagnosed yearly. The peak incidence in all the population groups and periods observed is after the menopause. A steady increase in female breast cancer incidence was observed over a 17-yr period. The greatest increase occurred in the low-incidence group of Jews born in Asia/Africa. (Author abstract) (10 Refs)

29. LYMPHOMAS AND LEUKAEMIAS. PART 1: TROPICAL AFRICA.

Olweny CL
Uganda Cancer Inst., P.O. Box 3935, Kampala, Uganda
Clin Haematol; 10(3):873-893 1981

Burkitt's lymphoma is extensively reviewed with briefer consideration of lymphocytic and histiocytic lymphomas, and leukemias in tropical Africa. Tumors of the lymphoreticular system, which are prominent in the area, account for 15% of all malignant diseases in Uganda. Epidemiology, etiology, clinical features and staging, pathology, differential diagnosis, treatment (surgery, chemotherapy, radiotherapy), complications, and prognosis of Burkitt's lymphoma are extensively detailed. Distinctive pathological features of Hodgkin's disease in tropical Africa include an excess of the mixed cellularity and lymphocytic depletion types and a relative deficiency of the lymphocytic predominant and nodular sclerosis types. The incidence rate of lymphocytic and histiocytic lymphoma in Uganda is slightly less than in England and Wales but the pattern in relation to age is somewhat different. The patterns of leukemias in tropical Africa, clinical features, hematological findings, and prognosis, are reviewed. (59 Refs)

30. FREQUENCY OF CARCINOMA OF PENIS WITH SPECIAL REFERENCE TO NORTH INDIA.

Jain SP, Agrawal PK, Jain S, Handa K, Sinha N, Dwivedi JN
J.K. Cancer Inst., G.S.V.M. Medical Coll., Kanpur 208 002, India
Indian J Cancer; 18(4):250-253 1981

The epidemiologic pattern of carcinoma of the penis, with special reference to North India, is reported. In the United States, carcinoma of the penis accounts for less than 1% of malignancies in males, In Burma, cancer of the penis accounts for 24.2% of all male cancers, and in Ceylon, 13.7%. Cancer of the penis is unknown in Israel. In Vishakhaptnam (India), penile cancer accounts for 12.5% of male cancers. In the series of 231 patients reported here, carcinoma of the penis accounted for 7.23% of all male cancers. In this series, the largest number of cases were in the 40-49 yr age group (33.79%), followed by the 50-59 yr age group (24.24%). The mean age at diagnosis in most western countries is 58 yr. Carcinoma of the penis is extremely rare in cultures that practice circumcision. In the series reported here, 99.13% of patients were Hindus (uncircumcised), and only two Muslim patients were seen. The Muslims had been circumcised at ages of 10 and 9, respectively, which is relatively late. The wide variation in frequencies of penile carcinoma cannot, however, be completely explained on the basis of circumcision. Poor sexual hygiene and low socioeconomic status may contribute to the incidence of carcinoma of the penis, but unknown factors remain to be elucidated. (14 Refs)

31. CASE-CONTROL STUDY OF 100 CASES OF GASTRIC CANCER.

Ye E, Tao Z, Shi K, Qiu X, Xu W, Li J, Zhu Z, Wang Y, Cai H, Yu Q, Peng Y, Guo X
Dept. Hygiene, Shanghai Second Medical Coll., Shanghai, People's Republic of China
Zhonghua Yufangyixue Zazhi; 15(2):107-109 1981

Etiologic factors are described and analyzed for 100 cases of gastric cancer (72 men, 28 women; median age 60.67) and 100 cases of nongastric cancer from eight hospitals around Shanghai. Results of the analysis showed that persons who were born in Shanghai or who had contact with petroleum or petroleum products had a high risk of gastric cancer. There was a significant sex difference in the relationship between gastric cancer and some of its etiologic factors. Thus, habitual overeating, irregular meals, and a history of stomach disease were the possible etiologic factors in males, while family history of tumors and habitual eating when angry were possible etiologic factors in females. No relationship was found between gastric cancer and smoked or fried foods or foods with high salt contents, as reported in the literature. Also, no significant difference was found between the gastric cancer group and the control group or between the sexes, which could be related to blood type (A, B, O), smoking, alcohol drinking, tea drinking, or neurologic factors. However, the rate of habitual ingestion of fresh vegetables was lower in the cancer group than in the control group. (no Refs) (In CHI)

32. EPIDEMIOLOGY OF LYMPHOID MALIGNANCY. AN ETIOLOGICAL HYPOTHESIS OF ADULT T-CELL LEUKEMIA/LYMPHOMA.

Tajima K, Tominaga S
Dept. Epidemiology, Aichi Cancer Center Res. Inst., Chikusa-ku, Nagoya 464, Japan
Gan To Kagaku Ryoho; 8(7):1009-1016 1981

In order to study adult T-cell leukemia/lymphoma (ATLL), which is prevalent in Kyushu, an etiological hypothesis of ATLL is proposed. ATLL is found in limited zones in Kyushu, mainly in rural and coastal areas, which are warm in winter and humid in summer. The geographical distribution of filariasis which accompanies several lymphoreticular ailments and was prevalent until 20 yr ago, was found to be closely correlated with that of patients with ATLL. It was also suggested from analysis of the chronological changes in the av wt and height of school children by prefecture that the nutritional condition of the inhabitants of Kyushu might have been poorer than that of other districts, especially in the past. In these respects, it is conceivable that repeated exposure to filarial infection in association with undernourishment and some other factors might have played an important role in the etiology of ATLL. (30 Refs) (In JPN)

OTHER EPIDEMIOLOGICAL FINDINGS

33. CANCER IN THE YEAR 2000. A REVIEW.

Saxen E
Suomen Syoparekisteri, Liisankatu 21 B, 00170 Helsinki 17, Finland
Duodecim; 97(20):1708-1716 1981

By the year 2000, one in four people are expected to have cancer. Little optimism exists for big advances in treatment. More promising is the possibility of prevention. Of the 4 million chemicals in use in the world, about 60,000 are extensively employed, and the number grows by 1,000 annually. A scant 20 chemicals are identified epidemiologically as definite cancer risks, and another 20 are suspected. Industrial pollution and occupational risks have been overemphasized at the expense of individual responsibility. It has been estimated that 40% of all cancer deaths in Finland are caused by cigaret smoking, whereas only 5% are attributable to occupational factors. According to a study based on the Finnish Cancer Registry, over 90% of the difference in cancer incidence between various occupational groups can be explained by differences in smoking habits. Of the Scandinavian countries, only Norway has not had a decline in cervical cancer since the mid-1960's, which correlates with the fact that Norway is the only Scandinavian country not instituting mass screening of women. It is estimated that such an examination would prevent 1000 occurrences of cervical cancer annually. (8 Refs) (In FIN)

VIRAL FACTORS INVOLVING ENVIRONMENTAL AND OCCUPATIONAL EXPOSURE

34. BURKITT'S LYMPHOMA.

Ambrus JL, Ambrus CM
Roswell Park Memorial Inst., 666 Elm St., Buffalo, NY, 14263
J Med; 12(6):385-413 1981

Clinical and epidemiologic features of Burkitt's lymphoma are reviewed. Epidemiologic studies suggest that simultaneous infection with Epstein-Barr (E-B) virus and malaria may be involved as etiologic agents. On the other hand we have found that in the Amazon region of Brazil and Peru both malaria and E-B virus infection is common among children, yet Burkitt's lymphoma is rare. The possibility exists that other concomitant etiologic agents and genetic factors are also involved. Several investigators su ggested the possible involvement of Reo 3 virus. We have found antibodies against Yaba virus. A laboratory worker who accidentally inoculated himself with Yaba virus developed a histiocytoma which when inoculated into Asiatic monkeys produced typical Yaba tumors. This was the first case that Koch's postulates were fulfilled in a virus induced neoplasm in man. Therapeutically, the best clinical results were obtained in those patients who were treated with small doses of cyclophosphamide. On the basis of somewhat inadequate follow-up studies, it is estimated that '5 year cures' were obtained in about 10% of the patients. (Author abstract) (44 Refs)

35. THE HEPATITIS-B VIRUS AND HEPATOCELLULAR CARCINOMA.

Kew MC
Dept. Medicine, Witwatersrand Univ. Medical Sch., Johannesburg, South Africa
Semin Liver Dis; 1(1):59-67 1981

The association between hepatocellular carcinoma (HCC) and chronic hepatitis-B virus (HBV) is discussed, and various explanations for its etiology are considered. The world-wide geographic distributions of the HBV carrier state and HCC are remarkably similar, with some exceptions. Countries in sub-Saharan Africa and the Far East, eg, with HBV surface antigen carrier rates of 6-14% also have the highest rates of HCC. However, in Greenland, where 7-25% of the population has chronic HBV surface antigen, HCC is nevertheless rare. This discrepancy could be explained by the absence of a cocarcinogen in the Greenland environment. The most persuasive evidence that an association exists between HCC and HBV is the frequency with which markers of the virus are present in the serum and tissues of patients with this tumor. Alternative explanations to a cause and effect relationship between HBV infection and HCC are discussed. However, no such considered explanations account for the association as well as the postulate that HBV plays a causal role in HCC. (84 Refs)

36. SEROLOGIC PROFILE AND POSSIBLE ETIOLOGIC FACTORS IN PRIMITIVE CARCINOMA OF THE LIVER.

Caporaso N, Giardullo N, Servillo F, Del Vecchio-Blanco C, Coltorti M
Istituto di Semeiotica Medica, I Facolta di Medicina e Chirurgia, Universita di Napoli, Napoli, Italy
Fegato; 27(1):55-57 1981

The relationship between primitive carcinoma of the liver (PCL) and chronic infection with virus B (CIVB) was studied

using radioimmunoassay. CIVB seems to play an important role in the etiology of PCL, especially in areas of high incidence of CIVB. Of 612 patients with evolutive liver pathology, 32 (36-83 yr old, 27 men and 5 women) had PCL. In 23 patients PCL was associated with cirrhosis (ALC); of these 9 had acute progressive hepatitis, 6 were alcoholics, and 7 had blood relatives who had died from PCL. Diagnosis was confirmed by biopsy (obtained through laparoscopy), scintigraphy, alpha1-fetoprotein, and rou tine blood chemistry. Nine patients had negative results for all serological markers, 11 had positive results for HBsAg+, 4 for anti-HBc+, and 8 for both anti-HBc+ and anti-HBs+. Of the 11 HBsAg+ positive cases, only 2 were associated with 'e' positive results, indicating that the infection with virus B had occurred long ago. No patients reported exposure to toxic industrial products, or contaminated food, or prolongued use of sexual hormones or their derivatives. PCL was frequently associated with CIVB even in non-ALC cases. (5 Refs) (In ITA)

POTENTIAL CARCINOGENIC FACTORS RELATED TO MEDICAL TREATMENT

37. CONTRACEPTIVES AND THE LIVER.

Schmid M
Medizinische Klinik, Stadtspital Waid, Tiechestr. 99, CH-8037 Zurich, Switzerland
Leber Magen Darm; 11(5):216-226 1981

Studies on the relationships between the use of oral contraceptives (OC) and hepatic diseases are reviewed. The relationship between the long-term use of OC and benign hepatocellular adenoma is now beyond doubt. The progestagen component of the ovulation inhibitor acts as an enzyme inducer which may facilitate the formation of carcinogenic metabolites from various substances, and prompt elimination of these metabolites with the bile is prevented by the cholestatic effect of the estrogens. The relationship between OC and focal nodular hyperplasia is less evident. Here, the congenital hamartomatosis represents a site of least resistance for the hormones, but the steroid hormones are probably responsible for the vascular complications, especially for peliosis. Malignant hepatic tumors (hepatocellular carcinoma and especially hepatoblastoma and angiosarcoma) in connection with the long-term use of OC are extremely rare. The alpha-fetoprotein level is usually not increased significantly in patients with hepatocellular adenoma and carcinoma due to OC. (52 Refs) (In GER)

38. WHAT DO WE KNOW ABOUT THE CAUSES OF OVARIAN CANCER?

Mount PM
Dept. Gynecologic and Breast Pathology, Armed Forces Inst. Pathology, Washington, DC
Contemp Obstet Gynecol; 18(6):47-49,53-54,58 1981

Current theories on initiation and growth of ovarian tumors are reviewed and interpreted. Ovarian cancer is the fourth most common fatal malignancy among women; modern diagnostic and treatment methods have had little impact on mortality. Epidemiologic studies have been impeded by a tendency to lump a multitude of histologic subtypes of ovarian cancer together, possibly masking important characteristics of particular types. Retrospective studies of risk factors for epithelial ovarian cancer have shown that the typical patient is either nulliparous or of low parity and has had difficulty in conceiving not attributable to anovulatory cycles. Long-term users of oral contraceptives appear to be at low risk for the disease. Theories of etiology are discussed. A simplified World Health Organization classification of the common epithelial tumors of the ovary is presented. Benign epithelial metaplasias are compared to their malignant counterparts. Genetic syndromes associated with ovarian neoplasms are reviewed. (20 Refs)

39. MANAGEMENT OF THE ADOLESCENT GIRL EXPOSED IN UTERO TO DES.

Gerbie MV
Dept. Clinical Obstetrics and Gynecology, Northwestern Univ. Sch. Medicine, Chicago, IL
Pediatr Ann; 10(12):486-489 1981

The epidemiology, pathogenesis, and clinical management in cases of in utero diethylstilbestrol (DES) exposure are described. DES was first used in pregnant diabetics, in those in danger of miscarriage, and in those who had previous still births or spontaneous abortions. The appearance in 1970 of six young women with clear-cell carcinoma of the vagina, an extremely rare neoplasm in this age group, led to the discovery that each of their mothers had been treated with DES during pregnancy. It has since been estimated that 80-90% of patients exposed to intrauterine DES will show gross and microscopic evidence of vaginal and cervical adenosis. Only 90/400 registered cases of clear-cell carcinoma have no history of DES exposure. The age range of DES-exposed clear-cell carcinoma is between 7-31 yr of age, with a median of 19. Topics discussed include embryology, management of DES-induced lesions, future fertility of those exposed in utero, occurrence of squamous cell carcinoma in DES-exposed women, and recent reports of genital abnormalities in males exposed in utero to DES. (17 Refs)

PUBLIC POLICY INVOLVING ENVIRONMENTAL AND OCCUPATIONAL CARCINOGENS

40. STANDARD FOR OCCUPATIONAL EXPOSURE TO ASBESTOS (29 CFR 1910.1001; REVISION).

Occupational Safety and Health Administration
(c/o R. Beliles) Office Carcinogen Standards, U. S. Dept. Labor, 200 Constitution Ave., N.W., Room N-3718, Washington, DC, 20210
Fed Regist; 47(8,Book2):1807-1808 1982

The United States Occupational Safety and Health Administration (OSHA) is developing a proposal to revise the current standard for occupational exposure to asbestos, perhaps including a reevaluation of the current permissible exposure limit (PEL) and of control requirements representing the most cost-effective way for industries to achieve PEL. The existing OSHA standard for asbestos specifies an 8-hr time-weighted av of 2,000,000 fibers/cubic meter (m3). The technological and economic impact of a 1975 proposal to reduce the PEL to 500,000 fibers/m3 is being analyzed. (no Refs)

41. CONSUMER PRODUCTS CONTAINING ASBESTOS.

Consumer Product Safety Commission
(c/o R. Fausett) Health Sciences, U.S. Consumer Product Safety Commission, Washington, DC, 20207
Fed Regist; 47(8,Book2):1845-1846 1982

Regulatory options for the use of consumer products containing asbestos are curr ently being studied. The Consumer Product Safety Commission could issue a standard or a ban concerning asbestos-containing products, require labeling of consumer products containing asbestos, or encourage voluntary action by industry, or some other action could be instituted. Special problems caused by asbestos-containing consumer products in the household warrant some regulatory action. (no Refs)

42. STANDARD FOR OCCUPATIONAL EXPOSURE TO ETHYLENE OXIDE (29 CFR 1910.1000, TABLE Z-1; REVISION).

Occupational Safety and Health Administration
(c/o R. Beliles) Office Carcinogen Standards, U.S. Dept. Labor, 200 Constitution Ave., N.W., Room N-3718, Washington, DC, 20210
Fed Regist; 47(8,Book2):1808-1810 1982

The present Occupational Safety and Health Administration's permissible exposure level (PEL) of ethylene oxide (EtO) of 50 ppm parts of air may be inadequate to protect workers from EtO-related diseases; a revision of the standard is proposed. Lowering the existing PEL to alternative 8-hr time-weighted averages of 0.5 ppm, 1 ppm, 5 ppm, and 10 ppm is being considered. The least costly alternative consistent with objectives of the Occupational Safety and Health Act will be determined. (no Refs)

43. CONTROL OF ORGANIC CHEMICALS IN DRINKING WATER (40 CFR PART 141; NEW).

Environmental Protection Agency
(c/o J. Cotruvo) Criteria and Standards Div., Environmental Protection Agency, Office Drinking Water (WH-550), Washington, DC, 20460
Fed Regist; 47(8,Book2):1837-1838 1982

Recent technological developments in analytical measurement techniques have allowed the identification of organic contaminants (including volatile organic chemicals: VOC) in drinking water that may pose a health risk to consumers. The best approach to VOC contamination of drinking water under the provisions of the Safe Drinking Water Act is being sought. Alternatives under consideration by the Environmental Protection Agency include: non-Federal regulatory actions, requirements for monitoring VOC and providing guidance on health effects and treatment technology, and setting national standards in the form of max contaminant levels for some or all of the chemicals. (no Refs)

44. CHRONIC HAZARDS ASSOCIATED WITH BENZIDINE CONGENER DYES IN CONSUMER DYE PRODUCTS.

Consumer Product Safety Commission
(c/o R. Fausett) Health Sciences, U.S. Consumer Product Safety Commission, Washington, DC, 20207
Fed Regist; 47(8,Book2):1843-1844 1982

The possibility of adverse health effects from consumer exposure to benzidine dyes, o-tolidine dyes, and o-dianisidine dyes (collectively termed 'benzidine congener dyes'), and the significant number of consumers that may be exposed to them, has prompted a proposal to regulate the use of such dyes. Alternatives to a petition to ban the dyes from consumer dye products include granting the petitio n, banning the use of benzidine dyes but not taking immediate action on o-tolidine dyes and o-dianisidine dyes, and denying the petition. (no Refs)

45. UREA FORMALDEHYDE FOAM (UFF) INSULATION (16 CFR PART 1306; NEW).

Consumer Product Safety Commission
(c/o H. Cohen) Office Program Management, U.S. Consumer Product Safety Commission, Washington, DC, 20207
Fed Regist; 47(8,Book2):1852-1857 1982

A proposal to ban urea formaldehyde foam (UFF) insulation is discussed. Rats and mice developed nasal cancer when exposed to inhalation doses of formaldehyde gas that were within an order of magnitude of the exposure in residences where UFF insulation has been installed. Substitutes exist for most but not all uses of UFF insulation. The Consumer Product Safety Commission has concluded that a ban is necessary and in the public interest. The benefits and economic impact of such a ban are discussed. (no Refs)

GENERAL AND MISCELLANEOUS FACTORS

46. CURRENT CONCEPTS AND CONTROVERSIES IN CHEMICAL CARCINOGENESIS.

Weinstein IB
Div. Environmental Sciences, Inst. Cancer Res., Columbia Univ. Coll. Physicians and Surgeons, New York, NY, 10032
J Supramol Struct Cell Biochem; 17(2):99-120 1981

Fundamental research at the cellular and molecular levels on mechanisms of action of chemical carcinogenesis and applied aspects and the concept of 'molecular epidemiology' of cancer are reviewed. The action of initiating agents and their metabolism and covalent binding to macromolecules is discussed under the following headings: metabolic activation, carcinogen potency, structures of carcinogen-DNA adducts, conformational changes in DNA, carcinogen modification of mitochondrial DNA, DNA repair, and carcinogen-DNA modification and mechanism of initiation. Tumor promotion and multifactor interactions are discussed in relation to two-stage skin carcinogenesis. Numerous effects elicited by phorbol ester tumor promotors, particularly 12-O-tetradecanoyl-phorbol-13-acetate, are classified into three categories: mimicry of transformation, modulation of differentiation, and membrane effects. Also considered in relation to phorbol ester tumor promotors, tumor promotion, and multifactor interactions are phorboid receptors, ion flux, possible role of kinases, chromosomal effects and activated oxygen, and chemical-viral interactions. The tumor-promoting activity of polycyclic aromatic hydrocarbons is discussed. A unified theory of tumor initiation and promotion is presented. Molecular epidemiology and cancer prevention are discussed with regard to limitations of current approaches and molecular cancer epidemiology. (94 Refs)

47. AN EPIDEMIOLOGICAL BASIS FOR CANCER CONTROL.

Armstrong B
NH and MRC Res. Unit in Epidemiology and Preventive Medicine, Univ. Western Australia, Dept. Medicine, Nedlands, Australia
Cancer Forum; 5(3):136-143 1981

Primary and secondary prevention of cancer, particularly cancer of the lung, breast, and colon and melanoma, which together account for greater than 40% of new cancer cases and premature mortality is discussed. Primary prevention aims at preventing cancer from occuring by ending exposure to the causal agent either by environmental or life type control. Lung cancer is attributable mainly to cigarette smoking; some cases result from occupational exposure. Breast cancer is associated with nulliparity, first full-term pregnancy at a comparatively late age, low parity, diet, radiation, post-menopausal estrogens, and oral contraceptives. Colon and rectal cancer are mainly related to dietary fiber deficiency and excess fat and meat consumption. Melanoma of the skin is due to exposure to UV radiation. Etiologies of other neoplasms are discussed: brain neoplasms (phenobarbitone use), prostate cancer (diet, cadmium exposure), stomach cancer (diet), leukemia (x-rays, benzene exposure, antineoplastic agent use), pancreatic cancer (diet, cigarette smoking), bladder cancer (occupational exposure to aromatic amines, cigarette smoking), and cervix cancer (sexual promiscuity). Dietary modification, cessation of smoking, and avoidance of excessive exposure to UV light was recommended. Screening methods involved in the secondary prevention of cancer include cervical cytology, proctosigmoidoscopy, and mammography at regular intervals for certain segments of the population. The choice between primary and secondary prevention of cancer is discussed. (20 Refs)

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As an additional service to readers of carcinogenesis (CK series) CANCERGRAMS, each issue now provides a bibliography of review articles of interest to carcinogenesis researchers, selected from journals screened for that month's CANCERGRAMS.

CHEMICAL CARCINOGENESIS

1. ETHYLENE OXIDE (ETO): EVIDENCE OF CARCINOGENICITY.
Coene RF
National Inst. for Occupational Safety and Health, Cincinnati, OH
Vet Hum Toxicol; 23(6):439-443 1981

DIETARY FACTORS IN CARCINOGENESIS

2. NUTRITIONAL ASPECTS OF CANCER PREVENTION: AN OVERVIEW.
Silverman J
American Health Foundation, Naylor Dana Inst Disease Prevention, Valhalla, NY, 10595
J Am Vet Med Assoc; 179(12):1404-1409 1981

3. FORMATION OF N-NITROSO COMPOUNDS IN FOODS.
Gray JI
Dept. Food Science and Human Nutrition, Michigan State Univ., East Lansing, MI, 48824
ACS Symp Ser; 174():165-180 1981

EPIDEMIOLOGY, ETIOLOGY AND GENETIC ASPECTS OF HUMAN CANCER

4. LYMPHOMAS AND LEUKAEMIAS. PART 2: TROPICAL AMERICA.
Jimenez E
Hospital Nacional de Ninos 'Dr. Carlos Saenz Herrera', Apartado 1654, San Jose, Costa Rica
Clin Haematol; 10(3):894-915 1981

5. LYMPHOMAS AND LEUKAEMIAS. PART 1: TROPICAL AFRICA.
Olweny CL
Uganda Cancer Inst., P.O. Box 3935, Kampala, Uganda
Clin Haematol; 10(3):873-893 1981

6. MALIGNANT MELANOMA.
Creagan ET
Div. Medical Oncology, Mayo Clinic, Rochester, MN, 55905
Compr Ther; 7(12):36-44 1981

7. MELANOTIC TUMORS OF THE UVEA AND RETINA.
Schmitt H
Universitats-Augenklinik, Theodor-Stern-Kai 7, D-6000 Frankfurt am Main, W. Germany
Med Klin; 76(24):672-675 1981
In GER

CELLULAR AND MOLECULAR MECHANISMS IN CARCINOGENESIS

8. THE NATURAL HISTORY OF CARCINOGENESIS: IMPLICATIONS OF EXPERIMENTAL CARCINOGENESIS IN THE GENESIS OF HUMAN CANCER.
Pitot HC, Goldsworthy T, Moran S
McArdle Lab. for Cancer Res., Dept. Oncology, Medical Sch., Univ. Wisconsin, Madison, WI, 53706
J Supramol Struct Cell Biochem; 17(2):133-146 1981

9. CURRENT CONCEPTS AND CONTROVERSIES IN CHEMICAL CARCINOGENESIS.
Weinstein IB
Div. Environmental Sciences, Inst. Cancer Res., Columbia Univ. Coll. Physicians and Surgeons, New York, NY, 10032
J Supramol Struct Cell Biochem; 17(2):99-120 1981

VIRAL AND IMMUNOLOGICAL ASPECTS OF CARCINOGENESIS

10. BURKITT'S LYMPHOMA.
Ambrus JL, Ambrus CM
Roswell Park Memorial Inst., 666 Elm St., Buffalo, NY, 14263
J Med; 12(6):385-413 1981

11. PRIMARY HEPATIC CARCINOMA.
Iosquin CJ
Catedra de Medicina Interna A, Facultad de Ciencas Medicas, La Plata, Argentina
Rev Fac Cienc Med La Plata; 4(2):27-31 1981
In SPA

METHODOLOGY IN CARCINOGENESIS RESEARCH

12. MUTAGENESIS AND CARCINOGENESIS TESTING IN VITRO.
Casto BC
Northrop Services, Incorporated, P.O. Box 12313, Research Triangle Park, NC, 27709
Biotechnol Bioeng; 23(12):2659-2671 1981

OTHER REVIEWS IN CARCINOGENESIS

13. CANCER IN THE YEAR 2000. A REVIEW.
Saxen E
Suomen Syoparekisteri, Liisankatu 21 B, 00170 Helsinki 17, Finland
Duodecim; 97(20):1708-1716 1981
In FIN

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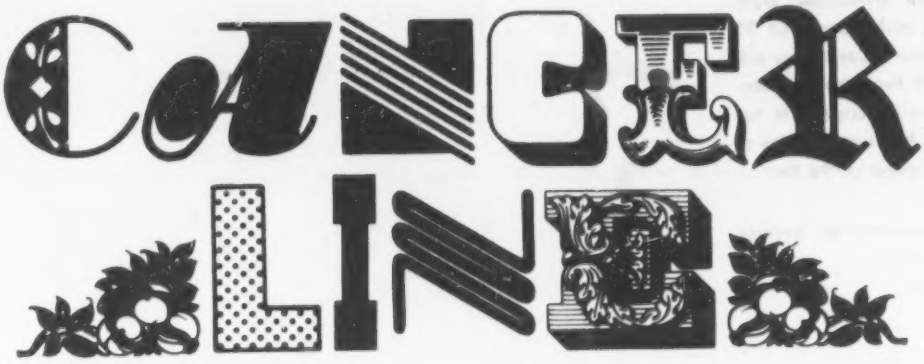

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ICRDB CANCERGRAM

ENVIRONMENTAL AND OCCUPATIONAL CARCINOGENESIS

SERIES CK02 No. 82/06

JUNE, 1982

This Cancergram is a service of the INTERNATIONAL CANCER RESEARCH DATA BANK (ICRDB) PROGRAM of the U.S. National Cancer Institute. Every few weeks, an updated Cancergram containing abstracts of selected cancer-related articles recently published in more than 3000 journals, and dealing with the topic indicated by the above title, is sent to researchers working in this area. These researchers are identified on the basis of the description of their current research project that has been submitted to the ICRDB Program, directly or via granting agencies.

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ENVIRONMENTAL FACTORS: COMMERCIAL PRODUCTS

1. COFFEE CONSUMPTION AND PANCREATIC CANCER: TEMPORAL AND SPATIAL CORRELATION.

Benarde MA, Weiss W
Dept. Community Medicine and Environmental Health, Hahnemann Univ. Health Sciences, Philadelphia, PA, 19102
Br Med J; 284(6313):400-402 1982

An examination of available data on per capita consumption of coffee and pancreatic cancer mortality in the United States since 1950 shows a temporal association. A rise and fall in coffee consumption was followed by a rise and fall in the incidence of pancreatic cancer with roughly a 10-yr lag. Nevertheless, there were inconsistencies in this relationship by sex and race. An unimpressive spatial relationship was also found between the consumption of coffee and pancreatic cancer mortality in 13 countries. While this relationship suggests an association, major inconsistencies cast doubt on the possibilities that it is one of cause and effect. This may be due to confounding, particularly by cigarette smoking. The association between cigarette smoking and cancer of the pancreas is much more consistent with a causal relationship. (Author abstract) (25 Refs)

2. FORMALDEHYDE EXPOSURE IN NONOCCUPATIONAL ENVIRONMENTS.

Daily KA, Hanrahan LP, Woodbury MA, Kanarek MS
Bureau of Prevention, Wisconsin Div. Health, P.O. Box 309, Madison, WI, 53701
Arch Environ Health; 36(6):277-284 1981

Free formaldehyde may be released from wood products and foam insulation where urea-formaldehyde resins have been used. From January, 1978 to November, 1979, 100 structures were investigated by the Wisconsin Division of Health after receiving complaints of health problems from occupants. Air samples were collected in midget impingers and analyzed for formaldehyde content by the chromotropic acid procedure. Health information was obtained from the occupants via questionnaires. Mean formaldehyde concentrations observed ranged from below the limit of detection to 3.68 ppm. Eye irritation, burning eyes, runny nose, dry or sore throat, headache, and cough were the primary symptoms which were reported by the occupants. Statistically significant associations were seen between formaldehyde levels and age of home/building materials. Observations presented suggest nonoccupational, indoor environmental exposure to formaldehyde is significant and may reach levels which exceed occupational exposure standards. (Author abstract) (32 Refs)

3. ABUSE OF PHENACETIN-CONTAINING ANALGESICS AND CARCINOMA OF THE RENAL PELVIS.

Syre G, Matejka M
Pathologisch-Anatomisches Institut, Universitat Wien, Spitalgasse 4, A-1090 Wien, Austria
Wien Klin Wochenschr; 93(13):420-423 1981

A retrospective analysis of 39 carcinomas of the renal pelvis that had been treated between 1968-1979 revealed capillary sclerosis in 12 cases. In 18 patients no capillary sclerosis was seen, and 9 tumors could not be analyzed. Since in 25% of the cases with capillary sclerosis phenacetin abuse was known, the sale of that analgesic should be professionally controlled. Patients, who receive phenacetin regularly, should be submitted to regular cytologic examination. Moreover, the obligation of the physician to inform the patient about the advantages and disadvantages of a treatment should include the cancer risk in case of phenacetin treatment. (27 Refs) (In GER)

4. THE RELATIONSHIP BETWEEN THE GEOGRAPHIC DISTRIBUTION OF LUNG CANCER INCIDENCE AND CIGARETTE SMOKING IN ALLEGHENY COUNTY, PENNSYLVANIA.

Weinberg GB, Kuller LH, Redmond CK
Center Environmental Epidemiology, Graduate Sch. Public Health, Univ. Pittsburgh, Pittsburgh, PA, 15261
Am J Epidemiol; 115(1):40-58 1982

The results of the Third National Cancer Survey have shown substantial variations in lung cancer incidence rates for white males within Allegheny County, Pennsylvania. To explain these differences, two areas showing over a twofold difference in the 1970 age-adjusted incidence rates (127.7 compared to 59.0 per 100,000) were studied in greater detail. Estimates of smoking experience by age were determined in the two areas by survey sampling methods of white males 35 yr of age and older. The results show the high risk area had a significantly greater proportion of males currently smoking and who had ever smoked cigarettes compared to the low risk area. Males in the high risk area also began smoking over 4 yr earlier, and proportionally fewer men smoked filter cigarettes. Calculations of lung cancer risk based on these results and a model of risk from the prospective and retrospective studies showed that almost all of the observed difference in risk between areas was attributable to cigarettes. (Author abstract) (35 Refs)

5. SMOKING AS RISK FACTOR FOR DIFFERENT FORMS OF CANCER AMONG 26,000 MEN AND WOMEN IN NORWAY. MATCHING OF THE GROUP OF SMOKERS WITH THE CANCER REGISTRY OVER A 12-YEAR PERIOD.

Lund E, Zeiner-Henriksen T
Kreftregisteret, Montebello, Oslo 3, Norway
Tidsskr Nor Laegeforen; 101(34-36):1937-1940 1981

The cancer risk due to smoking was studied among 11,979 men and 13,998 women born between 1895 and 1929 on the basis of data in the Norwegian Cancer Registry for the period 1966-1977. A total of 1,815 cases of cancer were registered for this group during the studied period. Nonsmokers accounted for 22.4% among men and 76.5% among women, ex-smokers for 21.7% and 4.2%, current smokers for 55.4% and 19.1%, and the smoking habits of 0.5% of the men and of 0.2% of the women are unknown. The age-adjusted relative risk (relative to nonsmokers) per 1,000 men was found to be 4.8 for lung cancer and 2.3 for cancer of the urinary bladder and urethra. For women, the relative risk was found to be 1.9 for lung cancer, 1.5 for cancer of the urinary bladder and urethra and 1.3% for cancer of the uterine cervix. The relative risk for all smokers was found to be 1.4 for lip cancer (men), 7.5 for stomach cancer (men), 4.4 for colon cancer (men), 0.9 for larynx cancer, 9.2 (men) and 1.7 (women) for lung cancer, 3.3 for cancer of the uterine cervix, 12.4 for prostate cancer, 3.7 (men) and 1.2 (women) for cancer of the urinary bladder and urethra, 4.8 (men) and 3.4 (women) for lymphoma and leukemia. Significant difference between smokers and nonsmokers was found with respect to laryngeal cancer (men), esophageal cancer (men), cancer of the liver and bile ducts (women) and carcinoma of the uterine cervix as well. The risk of cancer of the upper respiratory passages are higher for pipe smokers than for

cigarette smokers, while cigarette smokers had higher risk of lung cancer than pipe smokers. The cancer risk was found to be lower among ex-smokers than current smokers, and it increased with cigarette consumption. (17 Refs) (In NOR)

6. THE SMOKING-INDUCED EPIDEMIC.

Doll R
Green Coll, Oxford, Oxford, England
Can J Public Health; 72(6):372-381 1981

Review of smoking-induced diseases and influence of smoking on cancer is presented. Harmful effects of smoking are demonstrated by the results of the large follow-up studies of men with defined smoking habits that have been carried out in many countries. Results of the studies are presented showing the mortality in regular cigarette smokers, standardized for age relative to that in life-long non-smokers. Causes of death for which smoking is responsible include cancers of the mouth, tongue, oropharynx, esophagus, larynx, lung, bladder, possibly the kidney, and probably the pancreas, chronic bronchitis and emphysema, pulmonary heart disease, myocardial infarction, aortic aneurysm, and a wide variety of other vascular diseases. Data on mortality from lung cancer by sex, mortality of regular cigarette smokers relative to non-smokers for women, characteristics of smokers by age, sex ratio of mortality rates in British doctors, relative risk of death by cause in non-smoking women by smoking habit of husband, incidence of lung cancer and vitamin A consumption, relative risks of developing various cancers in relation to serum retinol levels, and mortality of cigarette smoking by type smoked are presented. Mortality from lung cancer in women who are non-smokers is increased if they are married to men who smoke suggesting that the health of non-smokers is liable to be damaged by other people's smoke in public places. After confirmation of the new evidence smoking will then cease to be matter of concern only to the individual and his own family and will have to be classed together with other atmospheric pollution. (42 Refs)

ENVIRONMENTAL AND OCCUPATIONAL FACTORS: RADIATION

7. URANIUM MINER LUNG CANCER STUDY. PROGRESS REPORT, 1 JULY 1980-1 JULY 1981.

Saccomanno G
Saint Mary's Hosp. and Medical Center, Grand Junction, CO
Uranium Miner Lung Cancer Study. Progress Report, 1 July 1980 - 1 July 1981. Available from National Technical Information Service, Springfield, VA, as DE81030162:, 8 pp., 1981.

The projects supported during the past year consist of: (a) collection of material from uranium miners known to have cancer of the lung into a tumor registry; (b) collection of interesting cases for second edition of the Manual on Pulmonary Cytology; (c) the regression study has been modified by computerization of rereads of all cases which showed moderate atypical squamous cell metaplasia or higher since 1968; (d) continuation of sputum collection, and collection of lungs from deceased miners; (e) cooperation with fluorescent bronchoscopy development for localization of carcinoma in situ of the lung; (f) the immunological studies are presently funded by the Abbott Laboratories, but are closely associated with the lung cancer studies. Our findings suggest that patients developing lung cancer concomitantly develop immune suppression; and (g) a small plastic tube has been developed which will aid in the removal of cells from fiberoptic brushings. The plastic mold is presently being developed by Midi-Tech Corporation in Boston and the tube will be available in September 1981. Analysis of the incidence of small cell cancers of the lung over the last 30 yr indicates that the incidence has dropped to 22% during 1975-1979 whereas it was 76.5% during the 5 yr span from 1954-1959. General observations indicate that cigarette smoking is the most potent carcinogen, but that tumors are increased in miners who smoke. Moreover, the ultimate incidence of oat cell carcinoma results in earlier death than with other tumor types. The most commonly found tumor in the non-smoking miner is the small cell type. (Author abstract)

8. ESTIMATES OF INTERNAL DOSE EQUIVALENT TO 22 TARGET ORGANS FOR RADIONUCLIDES OCCURRING IN ROUTINE RELEASES FROM NUCLEAR FUEL-CYCLE FACILITIES, VOLUME III.

Dunning DE, Killough GG, Bernard SR, Pleasant JC, Walsh PJ
Oak Ridge Natl. Lab., Oak Ridge, TN
Estimates of Internal Dose Equivalent to 22 Target Organs for Radionuclides Occurring in Routine Releases from Nuclear Fuel-Cycle Facilities, Volume III. Available from National Technical Information Service, Springfield, VA, as NUREG/CR-0150-V3:, 90 pp., 1981.

This report is the third of a three-volume tabulation of internal radiation dose conversion factors for man for radionuclides of interest in environmental assessments of nuclear fuel cycles. This volume provides an updated summary of estimates of committed dose equivalent for 142 radionuclides considered in the previous two reports. Intakes by inhalation and ingestion are considered. The International Commission on Radiological Protection (ICRP) Task Group Lung Model has been used to simulate the deposition and retention of particulate matter in the respiratory tract. Results corresponding to activity median aerodynamic diameters (AMAD) of 0.3, 1.0, and 5.0 micrometers are given. The gastrointestinal (GI) tract has been represented by a four-segment catenary model with exponential transfer of radioactivity from one segment to the next. Retention of radionuclides in systemic organs is characterized by linear combinations of decaying exponential functions. Fifty-yr dose commitment per microcurie intake of each parent nuclide is given for 22 target organs including contributions from specified source organs plus the systemic activity residing in the rest of the body, cross irradiation due to penetrating radiations has been incorporated into these estimates. A separate tabulation of effective dose equivalent for all 142 radionuclides is provided also; this quantity, as defined by ICRP Publication 26, provides an indication of the overall health risk resulting from a radionuclide exposure. (Author abstract)

9. RISK METHODOLOGY FOR GEOLOGIC DISPOSAL OF RADIOACTIVE WASTES: DOSIMETRY AND HEALTH EFFECTS.

Runkle GE, Cranwell RM, Johnson JD
Sandia Natl. Lab., Albuquerque, NM
Risk Methodology for Geologic Disposal of Radioactive Wastes: Dosimetry and Health Effects. Available from National Technical Information Service, Springfield, VA, as NUREG/CR-2166:, 54 pp., 1981.

The Dosimetry and Health Effects Model was developed at Sandia National Laboratories to estimate the long-term risks (expressed in latent health effects) that may result from potential releases from radioactive waste disposal in deep geologic media. Included in this report are the equations to calculate 70-yr intake/70-yr dose commitment factors to convert the curie

intake values to dose expressed in rem. External dose factors are included to estimate the dose from exposure to contaminated soil, sediment, air and water. Risk estimators from BEIR (1972-1980) are included to assess the long-term health effects that could result from calculated dose levels. Final risk estimates are expressed as the conditional probability of an individual dying of latent somatic cancer. (Author abstract)

10. DARTAB: A PROGRAM TO COMBINE AIRBORNE RADIONUCLIDE ENVIRONMENTAL EXPOSURE DATA WITH DOSIMETRIC AND HEALTH EFFECTS DATA TO GENERATE TABULATIONS OF PREDICTED HEALTH IMPACTS.

Begovich CL, Eckerman KF, Schlatter EC, Ohr SY, Chester RO
Oak Ridge Natl. Lab., Oak Ridge, TN

DARTAB: A Program to Combine Airborne Radionuclide Environmental Exposure Data with Dosimetric and Health Effects Data to Generate Tabulations of Predicted Health Impacts. Available from National Technical Information Service, Springfield, VA, as DE81030434:, 79 pp., 1981.

The DARTAB computer code combines radionuclide environmental exposure data with dosimetric and health effects data to generate tabulations of the predicted impact of radioactive airborne effluents. DARTAB is independent of the environmental transport code used to generate the environmental exposure data and the codes used to produce the dosimetric and health effects data. Therefore human dose and risk ca lculations need not be added to every environmental transport code. Options are included in DARTAB to permit the user to request tabulations by various topics (eg, cancer site, exposure pathway, etc) to facilitate characterization of the human health impacts of the effluents. The DARTAB code was written at ORNL for the US Environmental Protection Agency, Office of Radiation Programs. (Author abstract)

11. RADIOACTIVE EMISSIONS AND RADON.

Harley JH
Environmental Measurements Lab., United States Dept. Energy, New York, NY

Bull NY Acad Med; 57(10):883-896 1981

Man is presently exposed to both natural and enhanced sources of radon and its daughters. In both cases, indoor concentrations are much higher than those outdoors and control the total exposure. Sizeable groups live with enhanced levels that are perhaps one tenth of the present occupational limits. This is quite different than with other sources of environmental radiation exposure. Also, unlike other radiation exposures, infants should not be more sensitive than adults. Lung cancer seldom appears before age 40, and the contribution from radon daughter exposure in infancy should be minimal. The lung cancer rate in nonsmokers allows us to put an upper limit on the risk factor relating lung cancer incidence to radon daughter exposure. Considering that not all of the cancers in nonsmokers can be due to radon, a value of 0.002 for the lifetime risk of radon daughter exposure at 1/4 WLM per year fits in with all the data. Since permissible exposure limits are being suggested at levels that may be exceeded in some homes with only natural contributions of radon, any future regulatory action may become difficult to justify. Any given radon daughter concentration presents the same risk whether it is enhanced or natural, and the government agencies involved will be facing many difficult, it not insoluble, problems. (Author abstract) (19 Refs)

12. MALIGNANT PULMONARY NEOPLASM AND INHALANT RADIATION EXPOSURE.

Sevc J
Centrum hygieny zareni, Institut hygieny a epidemiologie, Srobarova 48, 100 42 Prague 10, Czechoslovakia

Cas Lek Cesk; 120(48):1440-1441 1981

Long-term cohort studies on the relationship between occupational exposure to inhaled radioactive substances and malignant pulmonary neoplasms in miners in Czechoslovakia, USA, and Sweden are reviewed. The results concurrently confirmed and lung tumor incidence in miners to be dependent on accumulated exposure to radon daughters, and alike elements, age at the onset of exposure, annual radiation dose and cigarette smoking. No specific histological type, and no increased mortality due to other malignant tumors were found. (17 Refs) (In CZE)

13. THE FEASIBILITY OF EPIDEMIOLOGIC STUDIES OF CANCER IN RESIDENTS NEAR THE ROCKY FLATS PLANT.

Dreyer NA, Loughlin JE, Fabey FH, Harley NH
Epidemiology Resources, Inc., P.O. Box 57, Chestnut Hill, MA, 02167
Health Phys; 42(1):65-68 1982

The feasibility of epidemiologic studies of cancer in residents near the Rocky Flats Plant can be determined by reviewing the magnitude of population exposure and estimating how many extra radiation-induced cancers may be expected to occur and the statistical probability that the occurrence of these extra cancers could be detected. It was concluded that epidemiologic studies of cancer in the residents was not warranted due to the extremely low population exposure levels. The increment in population exposure from Rocky Flats is far below that from natural background and from global fallout in the area. (10 Refs)

14. EFFECTS OF IONIZING RADIATION ON THE DEVELOPING EMBRYO AND FETUS: A REVIEW.

Hoffman DA, Felten RP, Cyr WH
Bureau Radiological Health, Rockville, MD

Effects of Ionizing Radiation on the Developing Embryo and Fetus: A Review. Available from National Technical Information Service, Springfield, VA, as PB82-115379:, 160 pp., 1981.

A general review of the literature dealing with effects of ionizing radiation on the developing embryo and fetus is presented. It encompasses both experimental and epidemiological data based on the age of the organism at exposure, with major emphasis on exposure during pregnancy. An appendix presents this information in table format. This review consists of three main sections: experimental, genetic, and epidemiological. These sections are organized according to the age of the organism at the time of irradiation. Data are presented by period of development and endpoints observed. In addition to the individual section summaries, an overall summation is presented. (Author abstract)

15. THE BIOLOGICAL EFFECTS OF LOW-LEVEL IONIZING RADIATION.

Upton AC
Inst. Environmental Medicine, New York Univ. Sch Medicine, New York, NY

Sci Am; 246(2):41-49 1982

The biological hazard resulting from exposure to low-level ionizing radiation (IR) is discussed. IR occurs as electromag-

netic or particulate radiation and may have a low or high rate of linear energy transfer (LET). IR may produce early transitory effects and/or late carcinogenic or heritable effects. Occurrence of nonheritable effects is apparently dose-rate-related and displays a threshold effect. Heritable effects apparently increase with total dose and display no threshold effect. Low-LET IR is more likely to produce simple forms of DNA damage that are likely to be repaired by cellular mechanisms when the IR dose rate is low. High-LET IR is more likely to produce more serious DNA damage that is more likely to be incorrectly repaired or remain unrepaired. Analysis of studies in animals and in three groups of humans (survivors of atomic bombings, patients undergoing radiological medical procedures, and those receiving occupational exposure to IR) shows an increase in breast cancer and leukemia with total exposure to IR. No heritable genetic damage has been demonstrated among children of atomic bomb survivors. Current data indicates that naturally occurring background IR accounts for 1-3% of all cancer fatalities, and that risks resulting from occupational exposure are small compared with other risks in daily life. (no Refs)

16. ETIOLOGICAL FACTORS IN MELANOMA.

Haim S, Gilhar A
No affiliation given
Harefuah; 101(5/6):125-126 1981

The etiology of melanoma is reviewed. Controversies involving theories which implicate exposure to UV radiation, skin color, atmospheric ozone levels, effects of sunlight on the immune system, and estrogen levels are discussed. (33 Refs) (In HEB)

OCCUPATIONAL FACTORS: SPECIFIC AGENTS OR INDUSTRIES

17. INCREASED RISK OF LUNG CANCER IN PESTICIDE-EXPOSED MALE AGRICULTURAL WORKERS.

Barthel E
District Clinic for Lung Diseases and Tuberculosis, Amsee, DDR-2060 Waren, E. Germany
J Toxicol Environ Health; 8(5/6):1027-1040 1981

The relationship between lung cancer and occupational exposure to pesticides in male agricultural workers was investigated. The 24 yr study covered 1,658 male subjects who had been active for at least 5 yr as agricultural plant production workers or agronomists. The subjects had generally been exposed to a variety of fungicides, insecticides, and herbicides (as well as maleic hydrazine) with previously demonstrated carcinogenicity. Overall, 169 malignant tumors were diagnosed, including 59 bronchial carcinomas (a calculated 1.8-fold increase over the general male population), 21 stomach cancers, 19 skin neoplasms, and 11 prostrate cancers. Standardized mortality ratios for lung cancers were 1.3, 1.7, and 3.0 for employment times of less than 10 yr, 10-19 yr, and greater than 19 yr, respectively. Forty-two histologically verified lung carcinomas included: 22 undifferentiated and small-cell, 14 squamous epithelium, 3 adeno-, 2 solid, and 1 alveolar cell. No significant difference in smoking habits between the exposed workers and a control group could be demonstrated. No conclusions may be drawn with respect to carcinogenicity of individual pesticides, however the increased mortality due to lung cancer is presumably the result of an additive effect of different pesticide ingredients with suspected carcinogenicity. (39 Refs)

18. MONITORING GENOTOXICITY IN THE OCCUPATIONAL ENVIRONMENT.

Sorsa M, Falck K, Norppa H, Vainio H
Inst. Occupational Health, Haartmaninkatu 1, SF-00290 Helsinki 29, Finland
Scand J Work Environ Health; 7(Suppl4):61-65 1981

The urinary mutagenicity assay and analysis of structural chromosome aberrations and sister chromatid exchanges in cultured lymphocytes were used to detect exposure to genotoxic chemicals in various job categories in the rubber industry and in oncology units at hospitals. The urine of workers in the rubber industry had significantly increased mutagenic activity after one week work in comparison to values obtained after vacation. Oncology nurses had a significantly higher mean sister chromatid exchange frequency than office personnel, but a value similar to that of other hospital nurses. (14 Refs)

19. ANTINEOPLASTIC AGENTS AS POTENTIAL CARCINOGENS: ARE NURSES AND PHARMACISTS AT RISK?

Reich SD
Univ. Massachusetts Medical Center, Worcester, MA
Cancer Nurs; 4(6):500-502 1981

Adverse effects on nurses and pharmacists exposed to antineoplastic drugs are described in relation to problems associated with epidemiological studies, mutagenesis and chromosomal analysis, and clinical studies. No hard evidence seems to suggest that personnel exposed to oncology drugs during the process of preparation and administration have a greater incidence of cancer than the general population. Evidence that these people are in an environment with greater mutagenic potential than other hospital workers is also limited. (21 Refs)

20. HOUSEHOLD RISKS WITH INORGANIC FIBERS.

Selikoff IJ, Sachs H, Repace J, Moschandreas D, Burbank B, Wilder S
Environmental Sciences Lab., Mount Sinai Sch. Medicine, City Univ. New York, New York, NY
Bull NY Acad Med; 57(10):947-961 1981

Risks associated with asbestos exposure are discussed including historical background, product use, clinical latency, pleural abnormalities, interaction with smoking, association with mesothelioma, and family contact asbestos disease. An ongoing study of 17,800 insulation workers initiated in 1967 revealed in a 10-yr period, total deaths of 2,271, 993 from cancer, 486 from lung cancer, and 175 from mesothelioma. period. Expected mortalities were 1,659, 320, 106, and zero deaths, respectively. Little change in the cancer rates of these workers was present until 15-20 yr from onset of exposure. Pleural abnormalities included interstitial fibrosis, often with fibrotic plaques. Death rate (per 100,000) for non-smoking asbestos workers was 58/yr, for asbestos workers who smoked 601/yr compared to control death rates, respectively, of 11/yr and 122/yr for non-smokers and smokers not working with asbestos, thus indicating a synergistic effect. Family contact asbestos disease is an increasing problem. Recent studies of 626 wives and children of asbestos workers revealed 209 abnormal roentgenograms. Asbestos exposure is also possible through items such as spackle compounds, papier mache, gloves, pipe insulation, and textiles. (16 Refs)

21. CHRONIC LYMPHOCYTIC LEUKAEMIA AND MYELOMA: ASSOCIATION WITH ASBESTOS EXPOSURE (MEETING ABSTRACT).

Jacobson RJ, Kagan E
Departments of Medicine and Pathology, Georgetown University School of Medicine, Washington, DC, 20007
Sixth Meeting of the International Society of Haematology, European and African Division, August 30-September 4, 1981, Athens, Greece. Hellenic Society of Haematology 409 pp., 1981.

There have been comparatively few published reports of an association between asbestos exposure and hematopoietic neoplasia. However, where this relationship has been documented, a striking predominance of lymphoproliferative malignancies has been noted. We now report a series of 9 asbestos-associated lymphoid neoplasms (5 cases of chronic lymphocytic leukemia, 2 cases of IgA myeloma and 2 cases of IgG myeloma). In all instances, there was clear-cut history of prolonged occupational exposure to asbestos dust. Coexistent parenchymal asbestosis was evident in 7 subjects. In 1 individual, the asbestosis was associated with a bronchogenic carcinoma. Curiously, IgG myeloma coexisted with a malignant mesothelioma in 2 further subjects. A variety of immunologic aberrations have been observed in asbestos-exposed subjects including hyperactive B cell function. Alveolar macrophages from asbestos-dusted rats are also capable of triggering lymphoproliferation. It is conceivable, therefore, that persistent immunologic stimulation, as a consequence of of asbestos inhalation, may eventuate in lymphoid cancer such as myeloma and chronic lymphocytic leukemia. (1 Ref)

22. PREVALENCE AND INCIDENCE OF BENIGN ASBESTOS PLEURAL EFFUSION IN A WORKING POPULATION.

Epler GR, McLoud TC, Gaensler EA
(c/o Gaensler) 80 E Concord St., Boston, MA, 02118
JAMA; 247(5):617-622 1982

Benign asbestos effusion was defined by (1) exposure to asbestos, (2) confirmation by roentgenograms or thoracenteses, (3) no other disease related to pleural effusion, and (4) no malignant tumor within 3 years. There were 34 benign effusions among 1,135 exposed workers compared with no otherwise unexplained effusions among 717 control subjects. Prevalence was dose related with 7.0%, 3.7%, and 0.2% effusions with severe (III), indirect (II), and peripheral (I) exposure, respectively. The latency period was shorter than for other asbestos-related disorders. Benign effusion was the most common asbestos-related abnormality during the first 20 years after exposure. Incidence studies showed 9.2 effusions per 1,000 person-years for Level III exposure, 3.9 for Level II, and 0.7 for Level I. Most effusions were small; 28.6% recurred, and 66% were asymptomatic. There was one mesothelioma six years after effusion. Asbestos exposure should be carefully searched for in patients with 'idiopathic' pleural effusion. (Author abstract) (24 Refs)

23. A COMPARATIVE STUDY ON THE PREVALENCE OF PLEURAL THICKENING RELATED WITH ASBESTOS EXPOSURES. A COMPARISON BETWEEN URBAN AND RURAL DISTRICTS USING MINIATURE X-RAY FILMS.

Ohyagi S, Kagamimori S, Toda K
Dept. Industrial Medicine, Kanagawa-ken Public Health Service Assoc., 58 Nihon-Odori, Naka-ku, Yokohama, 231, Japan
Sangyo Igaku; 23(4):366-376 1981

Prevalence of pleural thicking (PT) associated with asbestos exposure was compared in urban and rural districts with the aid of miniature x-ray films for mass tuberculosis examination of inhabitants. An increased incidence of PT was observed in males, particularly workers in a ship building factory, as compared with females. A sharp increase in PT was noted in men greater than 60 yr old. In both males and females, PT was more evident in urban residents. (26 Refs) (In JPN)

24. SMOKING AND DURATION OF ASBESTOS EXPOSURE IN THE PRODUCTION OF FUNCTIONAL AND ROENTGENOGRAPHIC ABNORMALITIES IN SHIPYARD WORKERS.

Pearle JL
Dept. Medicine, Div. Pulmonary Disease, Univ. California Los Angeles Sch. Medicine, Los Angeles, CA, 90024
JOM; 24(1):37-40 1982

Functional and roentgenographic abnormalities in 131 asbestos-exposed shipyard workers were assessed in terms of duration of asbestos exposure and smoking history to determine the relative contributions of these factors. Both exposure and smoking contributed to the frequency of abnormalities in FEV1 and FVC. In contrast, airways obstruction (FEV1/FVC less than 70%) was unrelated to exposure but correlated closely with smoking. Abnormalities in DLCO were minimally associated with asbestos exposure, but were strongly related to smoking history, suggesting that diffusion impairment in these workers is more likely to be related to smoking and emphysema than to interstitial disease. Significant roentgenographic pleural abnormalities were associated with both duration of exposure and smoking. Interstitial disease did not correlate with exposure and was only mildly associated with smoking. Smoking contributes to many of the functional and roentgenographic abnormalities in asbestos-exposed workers. (Author abstract) (11 Refs)

25. PATHOLOGY OF ASBESTOS: CLINICAL ASPECTS, EPIDEMIOLOGICAL FINDINGS, AND PREVENTION.

Bignon J, Brochard P, Sebastien P
Service de Pneumologie, Centre Hospitalier Intercommunal, 40, av. de Verdun, F-94010 Creteil, France
Schweiz Med Wochenschr; 112(6):177-184 1982

The word 'asbestos' is used to designate the main commercial types of asbestos (chrysotile, crocidolite, amosite) but there exist numerous asbestiform fibrous minerals, which are commercially valueless but widespread at the surface of the earth. Among them, zeolite has already created health hazards in Turkey. Measurement of fibers in air and in tissues can contribute to a better knowledge of lung and body fiber burden associated with diseases. Among fiber-related diseases, studies have recently focused on clinical, epidemiological and pathogenic aspects of pleural fibrosis and lung or pleural c ancer. At present the roles of the different types of fibers in the genesis of these diseases remain controverted. However, tobacco smoke associated with inhaled asbestos fibers provokes a multiplied risk of lung cancer. Regarding asbestos there exist regulations in most industrial countries designed to protect workers and diminish environmental pollution. (Author abstract) (53 Refs) (In FRE)

26. HEALTH HAZARDS OF ASBESTOS EXPOSURE.

Kaw JL
Industrial Toxicology Res. Centre, Lucknow 226 001, India
J Sci Ind Res; 40(5):342-346 1981

The industrial and environmental sources, pathologic and histologic manifestations, and carcinogenic role of asbestos are reviewed. Pulmonary fibrosis and pleural plaques found in lungs of persons exposed to asbestos dust are discussed. Suggested chemical and physical basis of the carcinogenetic role of asbestos is reviewed. (109 Refs)

27. CHROMATE LUNG CANCER WITH SPECIAL REFERENCE TO ITS CELL TYPE AND RELATION TO THE MANUFACTURING PROCESS.

Abe S, Ohsaki Y, Kimura K, Tsuneta Y, Mikami H, Murao M
First Dept. Medicine, Hokkaido Univ., North 14, West 5, Sapporo, Japan
Cancer; 49(4):783-787 1982

The manufacturing process of the chromate industry can be classified into five steps. The main hazardous pollutants of the first step are trivalent chromate compounds, and those of the second and third steps are hexavalent chromate compounds. Analysis of the detailed working history of chromate workers with bronchogenic carcinoma, yielded the following results: the work history of chromate lung cancer patients in the first step, which produced mainly trivalent chromate dust, was rather short. Patients with small cell carcinoma were engaged mainly in the second step (98.1% of the total working months), where they were heavily exposed to hexavalent chromate dusts. Patients with squamous cell carcinoma were engaged rather evenly in the second and fourth steps, and somewhat longer in the third step. Comparisons of the exposure periods revealed that the working history of small cell carcinoma patients was significantly shorter than that of squamous cell carcinoma patients. There were many more heavy smokers among the squamous cell carcinoma group as compared to the small cell carcinoma patients. Based on these results, it is concluded that the cell type of occupational lung cancer was mainly small cell carcinoma when the exposure to carcinogenic agents was heavy, and that the carcinogenicity of chromate was derived mainly from hexavalent chromate rather than trivalent compounds. (Author abstract) (9 Refs)

28. MORTALITY AMONG WORKERS IN A DIE-CASTING AND ELECTROPLATING PLANT.

Silverstein M, Mirer F, Kotelchuck D, Silverstein B, Bennett M
United Automobile Workers, International Union, 8000 E. Jefferson Ave., Detroit, MI, 48214
Scand J Work Environ Health; 7(Suppl4):156-165 1981

A proportional mortality and case-referent analysis was conducted of 238 deaths among hourly workers with at least 10 yr of service in an automobile hardware and trim manufacturing plant. The major operations in the plant were die-casting and electroplating. A statistically significant excess in total cancer deaths was almost entirely accounted for by lung cancer deaths. The case-referent study suggested association between lung cancer and work in particular departments of the plant. (25 Refs)

29. AN OCCUPATIONAL HEALTH SURVEY ON DRY CLEANING WORKERS.

Takeuchi Y, Hisanaga N, Ono Y, Iwata M, Oguri S, Tauchi T, Tanaka T
Dept. Hygiene, Nagoya Univ. Sch. Medicine, 65 Tsurumaicho, Showa-ku, Nagoya, 466, Japan
Sangyo Igaku; 23(4):407-418 1981

Working conditions and health of 181 (97%) dry cleaning employes at 52 (91%) workshops in Ward C of Nagoya were surveyed. Amounts of solvents used and worker health complaints were studied. In 13 workshops examined more closely, chlorinated compound levels in urines were higher in workers in direct contact with perchloroethylene than those with indirect contact; levels in both of the groups were higher than in workers using petroleum solvents. Hematological parameters and liver function of workers were examined. One case each of malignant lymphoma, liver dysfunction, and diabetes mellitus were discovered among workers. (44 Refs) (In JPN)

30. LUNG CANCER AND OTHER MORTALITY PATTERNS AMONG FOUNDRYMEN.

Egan-Baum E, Miller BA, Waxweiler RJ
Center for Disease Control, Natl. Inst. Occupational Safety and Health, 4676 Columbia Parkway, Cincinnati, OH, 45226
Scand J Work Environ Health; 7(Suppl4):147-155 1981

Mortality patterns previously reported by Egan were updated for members of the International Molders and Allied Workers Union. Death certificates had been obtained for 2,990 (99.2%) of the 3,013 members who died between 1971 and 1975 whose heirs were paid death benefits by the union. A case-referent study was conducted of 113 cases whose cause of death was cancer of the lung, bronchus, or trachea. Among both black and white foundry workers, there was a statistically significant increase in mortality due to all malignant neoplasms and nonmalignant respiratory disease. In white workers mortality from respiratory tuberculosis was elevated. There was a 44% excess of deaths from cancer of the lung among whites and a 76% excess among blacks. Deaths from emphysema, pneumoconiosis, and other respiratory diseases were significantly increased among whites. Proportional mortality rates demonstrated elevated lung cancer mortality in all age groups, peaking at age 60-64, and nonmalignant respiratory disease only above the age of 54 yr. The case-referent study demonstrated a statistically significant odds ratio of 2.36 for iron foundry workers compared with workers in steel and nonferrous foundries who died before the age of 65; the odds ratio for those who died after the age of 65 was 1.19. These findings suggest that environmental hazards of foundry work may not have been reduced by modern technology. (22 Refs)

31. CYTOGENETIC ANALYSES OF LYMPHOCYTES FROM WORKERS IN A NICKEL REFINERY.

Waksvik H, Boysen M
Dept. Genetics, Norwegian Radium Hosp., Oslo 3, Norway
Mutat Res; 103(2):185-190 1982

Chromosomal aberrations (gaps, breaks, exchanges) and sister-chromatid exchanges (SCE) in the lymphocytes of two groups of refinery workers exposed to 0.5 or 0.2 mg Ni/cubic meter (m3) of air were compared with those of a similar group made up of office workers from the same company. The 0.5 and 0.2 mg Ni/m3 refinery groups had higher blood plasma Ni concentrations and significantly increased numbers of chromosomal gaps than the control workers (11.9% and 18.3% vs 3.7%). The difference in percentage of gaps between the two

worker groups was not statistically significant. No significant relation between the increase in gaps and plasma Ni concentration, duration of exposure, or subject age was found. Break percentages did not differ significantly from those of controls, and no exchanges were found. SCE levels did not differ significantly among groups. A potential genetic hazard from nickel refinery processes is suggested, but some environmental aspects of exposure, such as other metals in the workplace, were not ruled out in this study. (19 Refs)

32. CANCER IN NICKEL-PROCESSING WORKERS IN NEW CALEDONIA.

Meininger J, Raffinot P, Troly G, Langer AM, Rohl AN, Fischbein A, Selikoff IJ
Imetal, 75755, Paris Cedex 15, France
Science; 215(4531):424-426 1982

Issue is taken with an epidemiologic study that attributed an excess of lung and sinus cancer among workers at a nickel smelter in Noumea, New Caledonia, to nickel dust containing chrysotile asbestos. The amount of asbestos fibers inhaled by the workers is lower than that permitted by French law. A reply to the criticism notes that an examination of the Noumea ores by the American Museum of Natural History confirmed the ample potential for exposure to chrysotile among the workers. (15 Refs)

33. STUDIES ON MUTAGENIC EFFECT OF ENVIRONMENTAL FACTORS IN NONFERROUS METALLURGICAL PLANTS.

Dziekanowska D
Zaklad Biologii Ogolnej, Instytut Biologiczno-Morfologiczny Slaskiej Akademii Medycznej, ul. K. Marksa 19, 41-808 Zabrze, Poland
Patol Pol; 32(2):263-268 1981

Chromosome aberrations in peripheral blood lymphocytes were studied in 32 workers occupationally exposed to nonferrous metals: (15 lead, 11 cadmium, 6 zinc). The numbers of aberrant cells and of structural chromosome aberrations in the workers showed variations from one worker to another, but the mean values showed an increase, compared with nonexposed controls. Especially significant differences were observed in the structural rearrangements (dicentric chromosomes and translocations), as well as disturbances in spiral formations. The frequency of sister chromatid exchanges (SCE) in lymphocytes showed a decrease in the workers compared with controls. This decrease in the workers may be related to the mutational senescence of cells. The results indicate that the synergistic effect of the different metals can induce chromosome mutations under the conditions of long-term exposure in vivo. (no Refs) (In POL)

OCCUPATIONAL FACTORS: GENERAL

34. HEALTH EFFECTS OF COMBINED EXPOSURES IN THE WORK ENVIRONMENT.

WHO Expert Committee, McDonald JC, Cho KS, Derban LK, Finklea JF, Kundiev Y, Osman Y, Xuechi G
Geneva, Switzerland
WHO Tech Rep Ser (662): 76 pp., 1981.

Theoretical aspects of combined effects and current information on occupational exposure, including the results of animal experiments, studies in human beings, and epidemiological field studies are reported. The role of combined exposures in major areas such as occupational mental health, chronic toxicity, parasitic disease, respiratory disease, cancer, and reproductive disorders is presented. Implications for occupational health practice are reviewed and recommendations for research are given. (272 Refs)

35. OVERVIEW OF FINNISH EPIDEMIOLOGIC STUDIES ON OCCUPATIONAL CANCER.

Tola S
Dept. Epidemiology and Biometry, Inst. Occupational Health, Haartmaninkatu 1, SF-00290 Helsinki 29, Finland
Scand J Work Environ Health; 7(Suppl4):133-139 1981

Finnish epidemiologic studies on occupational cancer are discussed with respect to asbestos, foundry work, rubber work, trichloroethylene, childhood cancer, bladder cancer, nasal cancer, and occupational mortality and cancer incidence statistics. Occupational mortality statistics for 1971-1975 revealed an excess cancer mortality among males for miners and quarry men and workers in industry. Among women excess cancer deaths were found for administrative, managerial, and clerical workers. Since smoking was relatively evenly distributed between different occupational groups, the differences in lung cancer incidence could not be explained only by smoking. Definite evidence of the association between cancer occurrence and asbestos and iron foundry work has been shown in Finland. Results in the rubber industry were similar to those obtained in other countries, but the material was small and had not reached statistical significance. The association between nasal carcinoma and the furniture industry is inconclusive because of the small number of cases. Large occupational cohorts may hide the increased risk of some special work grou ps. Some major impediments for the etiologic study of occupationally induced cancer in Finland include the small number of exposed workers, relatively short exposure periods, and the relatively recent establishment of many industries in the country. (33 Refs)

EPIDEMIOLOGICAL FINDINGS INVOLVING SPECIFIC AREAS

36. STUDY OF BIOPSIED BENIGN BREAST DISEASE IN WESTERN AUSTRALIA (MEETING ABSTRACT).

Fleming NT, Armstrong BK, Sheiner HJ
Department of Surgery, University of Western Australia, Adelaide, Australia
Clinical Oncology Society of Australia, November 24-27, 1981, Melbourne, Australia. The Society 70 pp., 1981.

The purpose of the study was to establish the incidence of biopsied benign breast disease in the female population of Western Australia and to study its descriptive epidemiology by using pathology reports and a Hospital Morbidity Survey (HMS) listing for the whole State. There were 1,283 females who had biopsied benign breast disease in 1978 which means a crude incidence rate of 290 per 100,000 females over 15 yr of age. The rates for three main histological categories were as follows: Benign Mammary Dysplasia 184/100,000, Fibroadenoma 63/100,000 and Other Benign Conditions 43/100,000. The largest proportion of biopsies were for women under 55 yr of age with the highest rate occurring between ages 30-49 yr. In these age groups, the incidence of breast cancer is still relatively low. Analysis of personal characteristics showed that biopsy

rates were higher in never-married compared with ever-married females, in women resident in the Perth area compared with those outside, and in Australian born females compared with those born in Southern Europe. Women working in 'Professional' and allied occupations had higher rates than those in other occupations and there was a suggestion of a trend for higher rates in higher socioeconomic groups. In a concurrent study of Breast Cancer in Western Australia there were parallel findings for all of the above characteristics except that there was no difference in rates according to area of residence. (no Refs)

37. PATTERNS OF MYELOPROLIFERATIVE AND LYMPHOPROLIFERATIVE DISORDERS PARTICULARLY LEUKAEMIA IN TASMANIA (MEETING ABSTRACT).

Baikie MJ, Lickiss JN, Giles GG, Panton J, Lowenthal RM
Department of Community Health, University of Tasmania, Hobart, Tasmania, Australia
Sixth Meeting of the International Society of Haematology, European and African Division, August 30-September 4, 1981, Athens, Greece. Hellenic Society of Haematology 409 pp., 1981.

Tasmania is an island state, population 418,000 predominantly Anglo-Saxon with a wide range of urban and rural situations and both primary and secondary industries. Residential, occupational and family histories have been obtained for virtually all cases of lymphoproliferative (LP) and myelo proliferative (MP) disorders occurring in Tasmania during 1972-79. Data has also been obtained from case controls drawn from the community. In this time there were 705 cases -137 acute leukemia (AL), 73 chronic lymphocytic leukemia (CLL) 27 chronic granulocytic leukemia (CGL), 76 Hodgkins disease (HD), 199 non-Hodkins lymphoma (NHL), 101 myeloma (MM) and 92 other related disorders. Analyses are preceeding in respect of circumstances of birth and occupation, ecological context and familial pattern and will be reported in detail elsewhere. These will be considered here with particular reference to the leukemias. Thus far cases of leukaenia (4 of 137 AL, 11 of 73 CLL, 1 of 27 CGL) have been found to have a 1st degree relative with some form of MP or LP disorder. There were 12 (3AL, 7CLL, 2CGL) with a 2nd degree relative with some form of MP or LP disorder. Concordant diagnosis was found in 10 patients or 8 pairs (4AL, 4CLL). All but one of these pairs (1AL) were first degree relatives. Occupational data suggests on interim analyses a possible bias toward benzene related industries as defined by Vianna. The results of space time cluster analysis will also be discussed. (no Refs)

38. EPIDEMIOLOGIC DATA ON MULTIPLE MYELOMA IN AUSTRIA (MEETING ABSTRACT).

Ludwig H
Department of Medicine II, University of Vienna, Vienna, Austria
Sixth Meeting of the International Society of Haematology, European and African Division, August 30-September 4, 1981, Athens, Greece. Hellenic Society of Haematology 409 pp., 1981.

Multiple myeloma accounted for 166 (17%) of the 1064 deaths due to lymphoreticular malignancies that were registered in Austria during 1979. The age distribution at diagnosis showed an outstanding peak in the 6th decade followed by patients with manifestation of the disease in their 5th and 7th decade, with a median age at diagnosis of 67.2 yr. The age-specific incidence curve showed a sharp increase from less than 0.2 myeloma patients per 100,000 inhabitants at age 40 through 9.1 patients per 100,000 Austrians of age 70. The age-adjusted myeloma incidence rates increased steadily during the period of time between 1969 (2.7/100,000) and 1979 (3.8/100,000). The distribution of paraprotein types analyzed in a group of 114 patients revealed: IgG 59%, IgA 16%, light chain 20%, IgD 2%, biclonal 1%, and non-secretory 3%. The kappa:lambda ratio was 2.4:1, the sex incidence showed an equal distribution (male:female equals 0.96:1). In conclusion, the age-specific and age-adjusted incidence rate for multiple myeloma as well as the distribution of paraprotein types in Austria is comparable with the data reported for other European countries and for the white population of North America. The median age at diagnosis is slightly higher than in most other reported studies and no predominance of male patients was observed. (no Refs)

39. BREAST CANCER IN CHILE.

Medina E, Marre B, Yrarrazaval M, Caris L, Medina AM
Departamento de Salud Publica, Facultad de Medicina, Universidad de Chile, Santiago, Chile
Rev Med Chil; 109(10):987-996 1981

Mortality due to mammary cancer (MC) in 1974-1975 varied from 2/100,000 in Costa Rica to 23/100,000 in England; in Chile, it was 4.5/100,000. MC mortality around the world is inversely related to birth rate. In Chile, the highest mortality rates due to MC were observed in Metropolitan areas and in Region V, which also have the lowest birth rates. Mortality rates for other cancers had been stable during the last 20 yr in Chile, while the mortality rate for the MC was increasing steadily (1.1/100,000 in 1930, 2.3/100,000 in 1950, and 4.6/100,000 in 1970). This increase in mortality rate due to MC was observed throughout Chile, with the highest values in Region V. Essentially this increase occurred in women greater than 45 yr old. The following aspects of the problem were discussed: diagnostic difficulties, relationship between the MC mortality rate and standard of living, family size, use of hormones, diet, exposure to different carcinogens, and risk factors. (33 Refs) (In SPA)

40. EPIDEMIOLOGY OF THE MALIGNANT LYMPHOMAS IN THE COUNTY OF VAS (1969-78) (MEETING ABSTRACT).

Wolkober A, Prinz G
Merenyi Gusztav Hospital, Szombathely, Hungary
Ninth Congress of the Haematological Society, October 1-3, 1981, Debrecen, Hungary. The Society 175 pp., 1981.

On the basis of 507 cases hemoblastosis, epidemiology, and pathology of malignant lymphomas in Vas county were studied. The rate of morbidity of the special forms correlated with the total population. The territorial distribution and the breakdown by age, sex, profession and blood-groups were studied as well as the annual incidence of the new patients, the mortality, the appearance of the first symptoms and the possible role of 'tumor-anamnesis'. The morbidity of hemoblastosis was less in Vas county than in the whole country and the incidence of malignant lymphomas depended on the different forms and the local appearance. The breakdown by age and sex was in a good agreement with the literature; however no difference could be found when blood-groups and professions were compared. The incidence of Hodgkin's lymphoma fluctuated but constantly increased in other forms. The monthly incidence of the first symptoms and lethality showed a periodicity. Other tumors were found mostly in patients with non-Hodgkin's lymphomas. (no Refs)

41. EPIDEMIOLOGICAL AND IMMUNOLOGICAL ASPECTS OF GASTROINTESTINAL CANCER IN ISRAEL (MEETING ABSTRACT).

Shani A, Bentwich Z
Unit of Oncology, Department of Medicine, Kaplan Hospital, Rehovot, Israel
UICC Conference on Clinical Oncology, October 28-31, 1981, Lausanne, Switzerland . International Union Against Cancer 131 pp., 1981.

Gastrointestinal (GI) cancer in Israel is significantly less common among Jews of Oriental (O) origin compared to Jews of European (E) origin. The purpose of our study was to determine whether such differences were in any way related to the immune functions. In a propective study of 188 newly diagnosed GI cancer patients several immune parameters were determined and correlated with disease stage and course and with the ethnic background. Patients were studied preoperatively and every 4 mo subsequently. Age, sex and ethnic backgroud matched controls were studied in parallel. The main positive findings were: a) Increased spontaneous (background) thymidine uptake of peripheral blood lymphocytes of (0) vs (E) patients accounting also for differences observed in the response to mitogens between the two ethnic groups; b) Higher grade of malignancy as assessed by nuclear grading in (0) vs (E) patients; c) A trend for more immune reactivity at tumor site among (0) vs (E) patients. In addition, a) The diagnostic efficacy of the leucocyte adherence inhibition assay (LAI) in the preoperative diagnosis of colorectal carcinoma was 31/54 (57%) and this rate increased to 70% when it was combined with determination of carcinoembryonic antigen. b) Antinuclear antibodies (ANA) were more common among patients and correlated with tumor dissemination. c) No significant differences were found between the various groups in the circulating immune complexes and blood lymphoid populations. It would thus seem that stronger immune reactivity towards the tumor is present in the Oriental host and would possibly explain why this ethnic group is better protected from GI cancer. (no Refs)

42. DESCRIPTIVE EPIDEMIOLOGY OF GASTRIC CANCER IN THE DISTRICT OF BASSANO, 1957-1976 (MEETING ABSTRACT).

Mastrangelo G, Zambon P, Nitti D, Scarparo F, Acqua A, Rossi R
Universita di Padova, Padova, Italy
UICC Conference on Clinical Oncology, October 28-31, 1981, Lausanne, Switzerland. International Union Against Cancer 131 pp., 1981.

The purpose of the present study is to describe the geographical distribution of Gastric Cancer (GC) by age and sex in the Unita Sanitaria Locale (health authority area) of Bassano, situated in the north-eastern part of Italy (population 115,380 in 1971). At present the economic characteristic is widespread small industry, whereas in the past the area covered was mainly rural. The age-standardized mortality rates of GC during the period 1957-1966 were 20.98/10(5) for yr for males and 11.95/10(5) for yr for females; during the successive period 1967-76 such rates were 12.16/10(5) for males and 7.14/10(5) for females. The age-specific mortality rates, strongly increasing with age, showed a pattern frequently observed when an exogenous agent, acting continuously throughout life, is believed to be the major etiological stimulus. The geographic distribution of observed and expected cases of GC in the 20 towns of district fails to indicate a definite relationship with the characteristic of economic development, eg, percent of employed in industry or agriculture, in each town. (no Refs)

43. INCIDENCE OF CANCER OF THE RECTUM IN THE PROVINCE OF PADOVA (MEETING ABSTRACT).

Lise M, Cagol PP, Andriulo B, Buzzatti A, Da Pian PP, De Marchi F, Mastrangelo G
Istituto Patologia Chirurgica III, Universita di Padova, Padova, Italy
UICC Conference on Clinical Oncology, October 28-31, 1981, Lausanne, Switzerland. International Union Against Cancer 131 pp., 1981.

Data concerning rectal cancer morbidity for 7 yr (1974-80) were obtained from registries of Pathology Laboratories of the province of Padova. For each patient the following data were collected: 1) histological diagnosis; 2) sex; 3) date of birth; 4) date of diagnosis; 5) residence; 6) department of admission. Cases diagnosed before 74, cases with uncertain diagnosis, and patients living in another province were excluded. Eight administrative areas of the province were used as geographical subdivision. The number of the cases observed in each area was compared with the expected number. The ratio between observed and expected cases is indicated as standarized incidence ratio (SIR), and its deviation from 1.00 was tested by the chi-square test. Annual incidence rates for each sex were calculated for the entire province, the city of Padova and the rest of the province. Rates were standardized with the direct method on the basis of Segi's world population. Confidence limits of 95% were calculated on the assumption of Poisson distribution. Both in the city and province and increasing trend with age was observed, with a peak in older ages. Males presented a higher risk to develop cancer of the rectum in all the province. The observed: expected ratio of cancer of the rectum resulted significantly lower in the northern areas and significantly higher in the Padova's urban area. A well defined area of particularly low incidence of rectal cancer was identified. Therefore it seems justified to perform an environmental research of etiological factors. (no Refs)

44. COLON CANCER INCIDENCE AND MORTALITY FROM OTHER CANCER BY LEVELS OF SERUM CHOLESTEROL - A PROSPECTIVE STUDY 1958-80 IN HIROSHIMA AND NAGASAKI (MEETING ABSTRACT).

Kato H, Shimizu Y
Department of Epidemiology and Statistics, Radiation Effects Research Foundation, Hiroshima, Japan
Proceedings of the Japanese Cancer Association, 40th Annual Meeting, October 1981, Sapporo, Japan. The Association 415 pp., 1981.

Incidence of colon and other cancer were observed in relation to the baseline measurement of serum cholesterol among 14,700 subjects at RERF. Av follow-up period is 17.3 yr. Incidence of colon cancer show an inverse relationship with level of cholesterol for men, whereas for women there is no consistent difference. A multiple logistic regression analysis revealed that such association still remains, even taking account other variables such as smoking and socioeconomic conditions for men. This finding is consistent with some Caucasian studies. For stomach cancer, similar tendency to colon cancer was observed. Mortality from other cancer does not differ statistically among the four levels of serum cholesterol for both men and women. (no Refs)

45. INCIDENCE OF MALIGNANT NEOPLASMS OF DIGESTIVE ORGANS.

Zemla B, Kolosza Z, Czech J, Jamrozik W

Instytut Onkologii, ul. Wybrzeze Armii Czerwonej 15, 44-101 Gliwice, Poland

Wiad Lek; 34(13):1077-1083 1981

Epidemiological data on the incidence of malignant neoplasms of the digestive organs in the population of Zabrze and its suburbs between 1965-1975 are presented. Malignant neoplasms of digestive organs were diagnosed in 199 men and 205 women. Esophageal tumors were diagnosed in 6 men and 4 women, gastric tumors in 130 men and 71 women, colon tumors in 14 men and 41 women, rectal tumors in 11 men and 23 women, hepatic tumors in 11 men and 20 women, gallbladder tumors in 5 men and 23 women, and tumors of the pancreas, peritoneum and undetermined localizations in 20 men and 27 women. The standardized incidences per 100,000 population were 1.64 for esophageal tumors, 32.96 for gastric tumors, 3.45 for colon tumors, 2.86 for rectal tumors, 2.81 for hepatic tumors and 50.96 for all localizations in men. The corresponding incidences in women were 0.30, 11.10, 6.54, 3.60, 3.07 and 32.03. The incidence of malignant tumors of the digestive organs, especially of the stomach, was significantly lower in the autochthonous populations of districts supplied with water of relatively high hardness, ie, with high levels of magnesium salts, chlorides and sulfates, than in the immigrant population. (8 Refs) (In POL)

46. CHANGING PATTERN OF TESTICULAR CANCER IN SCOTLAND (MEETING ABSTRACT).

Boyle P, Kaye S, Gillis CR, Calman KC, Kemp IW

West of Scotland Cancer Surveillance Unit, Greater Glasgow Health Board, Ruchill Hospital, Glasgow, Scotland

UICC Conference on Clinical Oncology, October 28-31, 1981, Lausanne, Switzerland. International Union Against Cancer 131 pp., 1981.

The relatively rare occurence of cancer of the testis has hindered epidemiological study. Mortality data from the whole of Scotland between 1931 and 1978 have been analyzed in 5 yr time periods (except for the three yr period 1976-1978) to enable sufficient numbers of cases to be aggregated to produce stable rates. The av annual age-standarized rates show a steady rise until 1970, increasing from 0.52 per 100,000 to 1.22 per 100,000 and then plateau. A similar pattern was found when the truncated age-standarized rates were calculated for the under-35 age group. This rise conceals a clearly changing pattern in the age-specific rates of cancer at this site. Whereas in the earlier time periods the peak mortality rate occurred in the oldest age group considered (over 75), a progressive change has taken place with the peak mortality now occurring in the 35-44 age group. The emergence of this peak has been accompanied by a decline in the rates among the over 75's. Evidence of the change has been supported by examining cancer incidence data collected by the Scottish Cancer Registration scheme, which has covered the whole of Scotland since 1959. (no Refs)

47. A FOUR YEAR EPIDEMIOLOGICAL SURVERY (1974-1977) OF THE CASES OF MALIGNANT LYMPHOMAS IN THE ISLAND OF SARDINIA (MEETING ABSTRACT).

Broccia G, Dessalvi P, Deplano W, Luxi G

No affiliation given

UICC Conference on Clinical Oncology, October 28-31, 1981, Lausanne, Switzerland. International Union Against Cancer 131 pp., 1981.

A survey of all cases of malignant lymphomas newly diagnosed among the Sardinian population in a four yr period (1974-1977) has been made. Cases have been collected through consultation of registries of all pathology laboratories and medical institutions in the island. The age-standarized rates of Hodgkin's disease in that period were 2.23/10(5) per yr for males and 1.61/10(5) per yr for females, with a M/F ratio: 1.38. These rates do not substantially differ from what is recorded in other European countries and are lower than those reported for North America and for the Padova provice (Italy). A bimodal age-related distribution is evident for both sexes. The age-standarized incidence rates of non Hodgkin's lymphoma in the same period were 4.08/10(5) per yr for males and 2.91/10(5) per yr for females, with a M/F ratio: 1.40. These rates are slightly to markedly higher than in other European countries and lower than those reported for North America. A progressive increase with age begins in the age class 25/34. (no Refs)

48. STANDARDISED MORTALITY RATIOS FOR SOME SELECTED CAUSES AMONG THE MAIN ETHNIC AND CHINESE DIALECT GROUPS IN SINGAPORE, 1970.

Lun KC, Lee HP

Dept. Social Medicine and Public Health, Natl. Univ. Singapore, Singapore, Singapore

Singapore Med J; 22(3):144-149 1981

Standardized mortality ratios (SMRs) are presented for a total of 6,205 deaths among Chinese, Malay, and Indian populations of Singapore by sex and ethnic/dialect group. Significantly higher SMRs were found for cancer and tuberculosis in the Chinese group. While further analysis of the main Chinese dialect groups showed only minor variations, there were differences in cancer deaths among the Hokkien, Teochew, and Cantonese subgroups. (13 Refs)

49. CANCER MORBIDITY IN NORTH-WESTERN INDUSTRIAL REGION OF THE SOVIET UNION.

Merabishvili VM, Serova LS

N. N. Petrov Res. Inst. Oncology, Leningrad, USSR

Vopr Onkol; 27(12):3-8 1981

Cancer morbidity in the North-Western region (NWR) of the European part of the Soviet Union is reported. The overall morbidity index for NWR exceeded that for USSR; increased morbidity was recorded for both the urban and rural populations. In 1975, the incidence (per 100,000 persons) of lung cancer, colonic cancer, stomach cancer, breast cancer, and cervical cancer was 30.2, 76.9, 57.7, 12.5, and 2.9, respectively. The decrease of morbidity indices was recorded for cervical cancer, compared with the increase of breast cancer morbidity. (3 Refs) (In RUS)

50. CANCER MORBIDITY IN USSR IN 1979 (ANALYSIS OF MORBIDITY INDICES).

Napalkov NP, Merabishvili VM, Tserkovnyi GF, Preobrazhenskaia MN
No affiliation given
Vopr Onkol; 27(11):3-27 1981

Cancer morbidity indices in the Soviet Union are summarized. An overall intensive index for 1979 was 201.6 per 100,000. A total number of newly detected cancers exceeded 530,000. Cancer morbidity in urban population was by 21.8% greater than that in rural population. The increase of morbidity indices was recorded for rectal cancer, lung cancer in men, skin cancer, breast cancer, and lymphatic and hematopoietic neoplasms. The decrease of morbidity indices was recorded for lip cancer, stomach cancer, and cervical cancer. There was no changes in the morbidity indices for esophageal cancer and lung cancer in women. The growth of prevalence index was indicative of the efficacy of the system of of cancer detection and follow-up. The overall index of 1-yr mortality was 35.4%. Absolute number of patients who died of cancer reached 366,400. The decrease of mortality indices was recorded for stomach cancer and cervix cancer. The increase of mortality indices was recorded for cancers of the mouth, pharynx, esophagus, rectum, larynx, lungs, breast, and urinary organs. (12 Refs) (In RUS)

51. TRENDS OF MORTALITY FROM LEUKAEMIA IN SPAIN (1900-1977) (MEETING ABSTRACT).

Loza J, Vines JJ, Estape J, Perez-Clausel C, Giralt M
Vitoria, Spain
Sixth Meeting of the International Society of Haematology, European and African Division, August 30-September 4, 1981, Athens, Greece. Hellenic Society of Haematology 409 pp., 1981.

Trends of mortality from leukemia in Spain, obtained from data given by the National Institute of Statistics, have been studied. Evolution of the leukemia mortality rates, compared to general mortality rates and the main causes of death, are analyzed. From 1900 to 1940, a leukemia rate of about 0.85/10(5), has been observed. From 1940 a sharp increase of this rate, up to 60 percent, has been noticed; from 1960 until 1977, the increase has lessened, remaining about 9 percent, but continuing. The analys is of this increase in the mortality rates for specific sex and age groups, shows a relation of M/F maintained at about 1.2 during the period, and an increase of the specific age mortality rate in every age group more pronounced in people over 65. The increase of the leukemia mortality rate in Spain, observed from 1945, is our our opinion, due to two main imbricated causes: a) the improvement of health care, coinciding with the Law of the Social Health (Ley de la Seguridad Social), and, b) the increase in the number of the aged; however, we can't discard with our data exogenous causes as contributing factors to these figures. (no Refs)

52. EPIDEMIOLOGIC AND PROGNOSTIC FACTORS FOR LUNG CANCER IN A COUNTY HOSPITAL.

Heath FR, Shalaby OF, Abdel-Dayem HM
(c/o Abdel-Dayem) Dept. Radiology, Erie County Medical Center, State Univ. New York, 462 Grider St., Buffalo, NY, 14215
J Surg Oncol; 19(2):109-113 1982

This is a study of 269 patients with lung cancer at the Erie County Medical Center who were admitted between 1973 and 1978. They were analyzed for sex, race, age, history of smoking, occupation, tumor cell type, cytology, incidence of metastases, changes in liver function, mode of treatment, and survival. The incidence of cancer was highest in white males. Only 1.5% of patients were under age 40. Smoking was a predisposing factor. Not enough information was available to determine the relationship of occupation to lung cancer. Squamous cell carcinoma was the most common (53.9%), followed by adenocarcinoma (16.0%) and small-cell carcinoma (12.6%). Sputum cytology was 28.3% sensitive, and bronchial washings were 52.2% sensitive. A greater incidence of bone metastases from a small-cell primary (50%) was found than is reported in the literature. Changes in SGOT and/or SGPT liver enzymes correlated significantly with liver metastases, but not with tumor cell type. Changes in alkaline phosphatase correlated well with bone metastases. Radiation was the most commonly used mode of therapy. The best survival was achieved in patients treated by surgery (22.6 months), followed by surgery and radiation (16.2 months); those treated by radiation alone had a mean survival time of 8.7 months. Untreated patients had a mean survival time of 2.5 months. Treated patients with adenocarcinomas had the longest survival (18.5 months), compared to 13.0 months for those with squamous cell carcinomas and 8.4 months for those with small-cell carcinomas. Only three patients survived 5 years, all of whom were treated surgically for adenocarcinoma. No patients with tumors of other cell types survived 5 years. The 5-year survival rates are 2.1% (3 of 141) for all histologic types of lung cancer and 12.5% (3 of 24) for adenocarcinoma. (Author abstract) (14 Refs)

53. CARCINOMA OF THE COLON AND RECTUM (MEETING ABSTRACT).

Fisher E
No affiliation given
Current Concepts in Cancer Therapy, December 10-12, 1981, St Louis, Missouri Washington University School of Medicine; 1981

Colorectal carcinoma attributes to 14% of all deaths due to cancer in the United States. The peak incidence of this disease is in the seventh decade with 8% diagnosed before age forty. Certain disease definitely predispose to development of colorectal carcinoma; familial polyposis, Gardner's syndrome and vilous adenomas. In some cases, adenomatous polyps may be premalignant lesions. Colorectal carcinoma is more common in urbanized civilizations than in rural areas. It is felt that diets low in roughage and high in sugar may be carcinogenic by prolonging contact of fecal material with colonic mucosa and promoting action of neoplastic agents. Possible carcinogens could be formed from bile by bacterial growth or derived from foods. Seventy per cent of colorectal cancers are found in the distal colon and rectum. The most common site of metastasis is to regional lymph nodes. Lymph nodes are involved in over 90% of cases where carcinoma has spread through the bowel wall. In cases where the lesion is confined to the bowel wall, positive nodes are present in over 45% of the cases. Positive nodes are often found some distance from the primary site with intervening normal nodes. For this reason, long segments of colon are removed. The size of the primary tumor does not correlate well with either incidence of metastases or survival. Prognosis is fairly well predicted by the Dukes Classification and it can be used at the operating table as a guide to the proper operation. Final classification of the tumor is done after permanent histologic slides are examined. (no Refs)

54. IS COLON CANCER A DISEASE OF CIVILIZATION?.

Raiser MW
Div. Gastroenterology, Edgewater Hosp., 5700 N. Ashland Ave., Chicago, IL, 60660
Minerva Dietol Gastroenterol; 27(4):638-640 1981

Epidemiology of carcinoma of the colon (CC) is discussed. CC has become increasingly common in North America and Western Europe in the last 30 yr. These areas have higher income, a higher standard of living, and higher meat consumption. A diet rich in meat and associated animal fat increases the production of cholic acids. Feces have higher amounts of cholic acids and their degradation products, some of which are carcinogens. Constipation, another problem associated with a higher standard of living, increases the amount of time feces are in contact with intestinal walls. Japanese, Poles, and other Eastern Europeans, all from areas that are low in CC, become as prone to CC as the rest of the population after emigration to the United States. On the other hand, Seven Day Adventists living in Loma Linda, California and consuming vegetarian diets have a much lower CC rate than the rest of the population; the amount of cholic acids and th eir derivatives in their feces is much lower. Another factor associated with diet is the type of bacterial flora and enzymes active in the intestines (beta-glucuronidase, nitroreductase, azoreductase etc). Associated with these problems is increased intestinal diverticulosis. Current dietary recommendations are for decreased total calories, animal fat, and cholesterol, and increased vegetable fibers and unsaturated fats. (14 Refs) (In ITA)

OTHER EPIDEMIOLOGICAL FINDINGS

55. EPIDEMIOLOGIC ASPECTS OF THE CURRENT OUTBREAK OF KAPOSI'S SARCOMA AND OPPORTUNISTIC INFECTIONS.

CDC Task Force on Kaposi's Sarcoma and Opportunistic Infections
(c/o J. Curran) Technical Information Services, Centers for Disease Control, Atlanta, GA, 30333
N Engl J Med; 306(4):248-252 1982

Surveillance activities and current epidemiologic knowledge of the recent outbreak of Kaposi's sarcoma and opportunistic infections among homosexual men in the United States are described. During the period June 1-November 10, 1981, 159 cases of Kaposi's sarcoma, Pneumocystis carinii pneumonia, and other opportunistic infections in persons less than 60 yr old were reported to the Centers for Disease Control. Among 76 men with P. carinii pneumonia, 30 died of the initial infection. Of 46 survivors, 13 subsequently died, including 4/8 who had recurrent P. carinii pneumonia. The remaining deaths were attributed to Kaposi's sarcoma or to other opportunistic infections. Among 15 patients with both Kaposi's sarcoma and P. carinii pneumonia, Kaposi's sarcoma was diagnosed first in 6, pneumonia was diagnosed first in 6, and the diagnoses were simultaneous in 3. Of 10 patients with other serious opportunistic infections, 4 had progressive or disseminated herpes simplex virus infections. Over 40% of patients with Kaposi's sarcoma, P. carinii pneumonia, or both had other serious opportunistic infections. A secular increase in the number of reported cases was observed. All but one of the 159 cases occurred in men, 92% of whom were reported to be homosexual or bisexual. Over 75% of patients lived in New York City, San Francisco, or Los Angeles. (25 Refs)

56. ANTICANCER RESEARCH.

Hirt B
Institut suisse de recherches experimentales sur le cancer, ch. des Boveresses, 1066 Epalinges s/Lausanne, Switzerland
Rev Med Suisse Romande; 101(11):859-862 1981

Implications of epidemiological and experimental cancer research are described. Epidemiological studies allow for the determination of the frequency and geographic incidence of cancer. The epidemiological studies indicate that most cancers are related to lifestyle, particularly diet. Experimental research has shown that cancers are monoclonal and that viruses and chemical carcinogens are sometimes involved in their development. (5 Refs) (In FRE)

57. KAPOSI'S SARCOMA IN YOUNG HOMOSEXUAL MEN.

Myskowski PL, Romano JF, Safai B
(c/o Safai) 425 E. 67th St., New York, NY, 10021
Cutis; 29(1):31-34 1982

The incidence, clinical features, associated conditions, pathogenesis, and prognosis of a new form of Kaposi's sarcoma (KS) are discussed. Within the last three yr 54 such cases showed differences from traditional KS including a mean age of 39 yr, all men with bisexual or homosexual preference, and geographic clustering in New York City and California. Clinical features of the new variant of KS include early presence of lymph node and/or mucous membrane involvement, pityriasis rosea-like pattern of skin lesions primarily on the head, trunk, and upper extremities, and systemic complaints. Associated conditions include pneumocystis carinii pneumonia, herpes simplex infection, toxoplasmosis, and cryptococcosis, but not secondary neoplasms. A history of prior sexually transmitted disease in new KS patients suggests a relationship to KS development. Cytomegalovirus infection was reported in 94% of cases. Immune defects are also suspected in young homosexual KS patients. The prognosis for the new form of KS is less favorable, with a 20% mortality rate at the present time. Effects of therapy are difficult to evaluate thus far. Awareness of the features of the new KS will enable practitioners to better recognize this disease. (18 Refs)

58. EPIDEMIOLOGY OF BREAST CARCINOMA IV: AGE AND HISTOLOGIC TUMOR TYPE.

Rosen PP, Lesser ML, Senie RT, Duthie K
Memorial Sloan-Kettering Cancer Center, 1275 York Ave., New York, NY, 10021
J Surg Oncol; 19(1):44-47 1982

The purpose of this study was to correlate major chronologic events known to have a bearing on the risk for developing breast carcinoma with histologic tumor type. Data were obtained for 1,024 consecutively treated patients with the seven most common forms of mammary carcinoma. The age of occurrence of the following events was determined: menarche; first marriage; first pregnancy and first childbirth; last pregnancy and last childbirth; diagnosis. The interval between each of these events and diagnosis of breast cancer was also calculated. Patients with medullary carcinoma had a significantly lower mean age at diagnosis than those with any of the other tumor types. Because of the lower mean age at diagnosis, medullary carcinoma patients were found to have significantly shorter intervals between age at diagnosis and the following: menarche, first pregnancy or first childbirth, and last pregnancy or last childbirth. Intervals between age at diagnosis and these other events were not significantly different among patients with

other types of carcinoma. The ages of menarche, marriage, or pregnancy were not related independently to any tumor type. These data indicate that except for current age, the age of occurrence of major risk factors for developi ng breast cancer is unrelated to the histological type of tumor a patient develops. (Author abstract) (21 Refs)

59. EPIDEMIOLOGY OF MALIGNANT TUMORS.

Karrer K
Institut fur Krebsforschung, Universitat Wien, Borschkegasse 8a, A-1090 Wien, Austria
Wien Klin Wochenschr; 93(13):403-411 1981

The significance of cancer epidemiology lays in its information about cancerogenic factors, cancer incidence, prognostic factors, and therapeutic results. A complete cancer statistic provides the base for the development of a cancer control program including its economic factors. For example, the effectivity of mass screening programs can be determined; the influence of early diagnosis on survival times can be estimated; and the general expense for cancer diagnosis and treatment that has to be covered by the community can be calculated. The following cancerogenic factors were determined: certain chemical compounds, congenital and genetic factors. Accordingly, people with certain professions are running higher risks of getting a certain type of cancer than others. For example, the incidence of cancer of the scrotum is especially high in chimney sweepers, and that of lip cancer in fisherman. The comparison of cancer incidence in different countries revealed a much higher rate, for example, in Newfoundland than in Japan concerning cancer of the lips (ratio: 250: 1), or in California compared with W. Germany concerning nasopharyngeal cancer (ratio: 100:1). These statistics indicate the effect of environmental factors as well as different life styles on cancerogenesis. (36 Refs) (In GER)

POTENTIAL CARCINOGENIC FACTORS RELATED TO MEDICAL TREATMENT

60. IRRADIATION RISKS TO PATIENTS DURING DIAGNOSTIC PROCEDURES. MYTHS AND REALITIES.

Tubiana M
Service de Medecine Nucleaire, Institut Gustave-Roussy, F 94800 Villejuif, France
J Radiol; 62(11):609-614 1981

Risks and prevention of risks associated with diagnostic radiation are discussed. From studies of survivors of atomic bombs at Hiroshima and Nagasaki, of patients irradiated for benign disorders (ankylosing spondylarthritis, pulmonary tuberculosis, and tinea), and of individuals occupationally exposed to radiation, it can be concluded that radiocarcinogenesis is observed in all tissues but at highly variable rates. The bone marrow, thyroid of children, and breast during puberty are particularly susceptible to the induction of cancer. Even for the most susceptible tissues, the absolute frequency of radiation-induced neoplasms is relatively low, at most several per cent for high-dose radiation. Patients who developed radiation-induced neoplasms usually had been exposed a hundred rads or more of radiation. Linear extrapolation of low-dose radiation risk is discussed. Genetic risks associated with radiation are probabilistic in nature. It is possible to clearly determine radiation-associated genetic risk and to determine thresholds of risks. Genetic risks associated with medical radiation are discussed. (29 Refs) (In FRE)

61. ROUTINE PREVENTION OF ABUSIVE IRRADIATION IN NUCLEAR MEDICINE.

Ducassou D
Service de Medecine Nucleaire, Hopital du Haut-Leveque, F 33604 Bordeaux-Pessac, France
J Radiol; 62(11):596-597 1981

When using radionuclide scanning the advantages and risk associated with the technic must be balanced. Radiation doses delivered to the target organ during scintigraphic examination of the liver, lungs, bone, and spleen are described. Minimization of dose, protection of personnel and of workers who produce the radiopharmaceuticals are discussed. The role of the doctor in preventing abuse of radiodiagnostics is considered. (6 Refs) (In FRE)

62. CANCERS OF THE THYROID GLAND.

Pissas A, Sarrazin R
Service Chirurgie Generale et Digestive, C.H.R.U. de Grenoble (Hopital des Sablons), B.P. 217X, 38043 Grenoble Cedex, France
Lyon Mediterr Med; 17(7):5052-5053,5062-5064 1981

Types, diagnosis, etiology, and treatment of thyroid cancer (TC) are reviewed. Carcinomas (differentiated: vesicular, Hurthle cell, papillary, and squamous cell carcinomas; undifferentiated: giant cell, fusiform cell, small cell, polymorphic, and medullary carcinomas) account for the majority of TC. Other TC include sarcomas, lymphomas, carcinosarcomas, and secondary tumors. Local and regional extensions of TC are described. Statistics vary on the frequency of TC. Risk factors for TC include pre-existing thyroid anomalies (goiter, thyroiditis, hypo- and hyperthyroidism), age (peak incidence at approx 20 and 60 yr old), sex (female predominance), cervical irradiation during childhood, and race. Clinical study of TC revealed by adenopathy, metastasis, or symptoms of the TC itself is described. Symptomatology of medullary TC is described. For diagnosis complete clinical examination of the thyroid gland and adenopathies is required. Paraclinical examinations involved in the diagnosis of TC include radiography, thyroid function studies, radionuclide scanning, thermography, tomodensitometry, echotomography, and fine needle biopsy. Differential diagnosis of TC and anaplastic, nodular, and medullary cancers are described. Treatment (surgery, chemotherapy, radioactive iodine, radiotherapy, hormones) and prognosis of TC are discussed. (no Refs) (In FRE)

63. ESTROGEN THERAPY AND BREAST CANCER - IS THE VERDICT IN?

Gambrell RD, Vasquez JM
Dept. Endocrinology, Medical Coll. Georgia, Augusta, GA
Contemp Obstet Gynecol; 19(1):38-45 1982

Risks involved in exogenous estrogen therapy are discussed. The incidence of breast cancer continues to rise steeply throughout the postmenopausal yr when estrogen levels have dropped. Pros pective studies have given no evidence that estrogen replacement therapy for menopausal women increases the risk of breast cancer. Data indicate that estrogen, especially when combined with progestogen, may in fact be prophylactic. For women not treated with hormone replacement, a breast cancer incidence of 500/100,000 has been estimated. In women taking estrogens alone, an incidence rate of 137.3/100,000 has been obtained. In women treated with estrogens plus progestagens, the incidence rate is 95.6/100,000. Differences between estrogen users and untreated controls are statistically significant. Epidemiologic factors, the role of endogenous hormones, predisposing and protecting factors, and prognosis for breast

cancer patients during estrogen therapy are discussed. (28 Refs)

PUBLIC POLICY INVOLVING ENVIRONMENTAL AND OCCUPATIONAL CARCINOGENS

64. SUMMARY OF EPA AND OTHER PROGRAMS ON THE POTENTIAL CARCINOGENICITY OF DIESEL EXHAUST.

Carey PM
Control Technology Assessment and Characterization Branch, Environmental Protection Agency, Ann Arbor, MI
Summary of EPA and Other Programs on the Potential Carcinogenicity of Diesel Exhaust. Available from National Technical Information Service, Springfield, VA, as PB82-128018:, 63 pp., 1981.

Much research has been performed to evaluate the health effects associated with exposure to diesel emissions. The research performed fails into five general areas: mutagenicity, carcinogenicity, non-genetic effects, characterization and epidemiology. EPA is conducting a massive research program that includes studies in each area. Since epidemiological data for diesel emissions are limited, a major portion of EPA's research effort involves determining the relative mutagenic and carcinogenic potency of diesel emissions compared to potencies of comparative emissions for which epidemiological data are available. EPA will use the results of these studies with epidemiological data for the comparative sources to assess the human health risk associated with exposure to diesel emissions. (Author abstract)

65. OCCUPATIONAL EXPOSURE TO ETHYLENE OXIDE.

Occupational Safety and Health Administration
(c/o R. P. Belliles) Dept. Labor, Occupational Safety and Health Admin., Room N3718, Washington, DC, 20210
Fed Regist; 47(17):3566-3571 1982

Notice is given that OSHA is undertaking through rulemaking procedures under section 6(b) of the Occupational Safety and Health Act of 1970 (the Act), 29 USC 655(b), a reevaluation of the current occupational health standard regulating employee exposure to ethylene oxide (EtO). This notice summarizes the information currently available to OSHA concerning the production and use of EtO, estimates of employee exposure, and the potential health effects of employee exposure to EtO. The notice also invites in terested parties to submit data, views and comments regarding the development of a new standard for EtO and the appropriate scope of coverage. (Author abstract) (39 Refs)

66. US BEGINS TO GET TOUGH ON ETHYLENE OXIDE.

Heneson N
Washington, DC
New Sci; 93(1291):294 1982

Tighter safety controls for ethylene oxide (EO), proposed by the Occupational Safety and Health Administration (OSHA) are discussed. EO, a major industrial chemical, is a suspected human mutagen according to newer, more extensive studies. New OSHA standards would lower the permissible av 8 hr worker exposure to EO, which is currently set at 50 ppm. A petition to OSHA by a lobby group and a labor union to set an emergency standard of 1 ppm averaged over 8 hr was rejected. Several industries, however, have already set a safety standard of 10 ppm of their own volition. (no Refs)

67. RECOMMENDED HEALTH-BASED LIMITS IN OCCUPATIONAL EXPOSURE TO SELECTED ORGANIC SOLVENTS. REPORT OF A WHO STUDY GROUP.

Zielhuis RL, Douglas GA, Ikeda M, Nogueira DP, Noweir MN, Sumamur PK, Ulanova IP
World Health Organization, Geneva, Switzerland
WHO Tech Rep Ser (664): 84 pp., 1981.

Information on health effects of toluene, xylene, carbon disulfide, and trichloroethylene is reviewed and evaluated. Recommended limits for occupational exposure are derived from data on exposure-effect and exposure-response relationships. Exposure limits are presented to facilitate conversion to operational limits or standards by appropriate authorities. (no Refs)

68. BIOLOGICAL MARKERS FOR CHEMICAL EXPOSURE.

Maugh TH
No affiliation given
Science; 215(4533):643-647 1982

The health problems associated with hazard waste storage and dump sites are discussed with special emphasis on the ways to monitor the chemical exposure and to assess the long-term health effects. Difficulties encountered in the assessment of chromosome aberrations and sister chromatid exchanges, reproductive abnormalities, and neurotoxic effects are outlined, and the need for long-term monitoring of the population at risk is emphasized. (3 Refs)

69. NEEDED: A PRACTICAL CANCER POLICY.

Hurst EH
Environmental Health and Safety, Nalco Chemical Co., Oak Brook, IL
Ann NY Acad Sci; 363:79-87 1981

In order to manage cancer risks cost-effectively, three tools are needed. First, the acceptable criteria for classifying or identifying a substance as a carcinogen must be determined. This decision is not a political one; it should be made by scientists. These criteria should not include highly suspect data or preliminary unconfirmed information. Second, the proper level of acceptable risk must be determined in the regulatory process, based on scientific knowledge and the cost factor needed to achieve this level. Zero risk is not practical and probably not possible. Third, the regulations must be flexible to permit updating with new scientific knowledge as well as new technology for cost-effective control. (7 Refs)

ANALYTICAL AND METHODOLOGICAL ASPECTS OF CANCER EPIDEMIOLOGY

70. THE CONTRIBUTION OF CANCER REGISTRIES IN VICTORIA AND NSW TO CANCER PREVENTION AND CONTROL (MEETING ABSTRACT).

Ford J, Dodds A
No affiliation given
Clinical Oncology Society of Australia, November 24-27, 1981, Melbourne, Australia. The Society 70 pp., 1981.

Since 1940, the Central Cancer Registry of Victoria has collected data on a number of variables from public cancer patients attending 10 contributing hospitals in the metropolitan area of Melbourne. The Registry has had an 'end results' and 'treatment intention' orientation but is expanding to universal registration. An assessment of cancer incidence is possible for particular sites, as for most cancers the Registry covers about half of the possible cases: relative frequencies of cancer by site are estimated. Time trends in the ratio of early to late stages at time of diagnosis and the length and quality of survival in relation to particular sites by stage and treatment are discussed. The Central Cancer Registry of NSW is a population-based Registry established in 1972. Descriptive data have been published for all sites for 1972 to 1977 and show geographical variations with other countries: Migrant patterns with statistically significant differences when compared with Australian born, eg high stomach cancer in Greek and British males and females, low colon cancer in Southern Europeans, time trends in female lung cancer with a significant rise 1972 to 1977. A case-control study has shown a ten-fold relative risk of renal pelvis cancer in females with regular analgesic consumption, and an increased risk ratio in males. (no Refs)

71. POSSIBLE INFLUENCES OF THE SURVEILLANCE MECHANISM ON THE DESCRIPTIVE EPIDEMIOLOGY OF MELANOMA OF SKIN (MEETING ABSTRACT).

Ford J
Health Commission of New South Wales, New South Wales, Australia
Clinical Oncology Society of Australia, November 24-27, 1981, Melbourne, Australia. The Society 70 pp., 1981.

The incidence of malignant melanoma of skin is stated to be increasing at the rate of about 5% per annum in many populations. While such increases are real and are reflected in mortality data, the influence of possible artefacts in the collection and classification of this disease must be taken into careful consideration as the effect could be considerable. Improved screening for early skin cancer, and early presentation of all lesions due to education programs can give a rise in recorded cases. In NSW, the increased use of pathology services for examination of all skin lesions removed may also contribute. Pathologists have conducted reclassification studies and congruence surveys with generally unsatisfactory results. In NSW the effect of collection on incidence over the yr 1973-77 was an 'increase' in standardized incidence rates for females from 17.9 per 100,000 (1973) to 22.3 per 100,000 (1976), with a 'fall' to 14.8 the following yr (1977) the reasons for these variations are given. Some classification effect can also be demonstrated. (no Refs)

72. SMOKING, LUNG CANCER AND HYPOTHESIS TESTING.

Burch PR
Dept. Medical Physics, Univ. Leeds, General Infirmary, Leeds LS1 3EX, England
Med Hypotheses; 7(12):1461-1470 1981

Sex- and age-specific secular trends in mortality from lung cancer for 1974-1975 to 1977-1978 in England and Wales were analyzed relative to corresponding changes in cigarette consumption. This study, as well as an earlier study based on similar data obtained for several periods between 1950 and 1975, tested the precipitator hypothesis, which states that carcinogenic risk is linear with the av rate of smoking at an interval of 'tau' yr before death, and that D (smoking rate needed to double the death rate) is consistent with respect to age. Results of the two studies were similar. Using the two-tail t-test, no significantly positive values for 1/D were obtained in the present study; four of the six values for 1/D were negative, two being significant (females, tau = 2.5 and 5 yr). Thus, neither study generally supports the precipitator hypothesis. Given that the greatest anomalies resulted, at least partially, from errors in diagnostic accuracy and death certification, it will be impossible to draw conclusions about trends in lung-cancer mortality until the underlying cause of death is accurately recorded on death certificates. (20 Refs)

73. ASSESSMENT OF TECHNOLOGIES FOR DETERMINING CANCER RISKS FROM THE ENVIRONMENT.

Office of Technology Assessment
Office of Technology Assessment, Washington, DC
Assessment of Technologies for Determining Cancer Risks from the Environment. Available from National Technical Information Service, Springfield, VA, as PB81-235400:, 243 pp., 1981.

This report examines the technologies used to gather and analyze information about cancer in our society, as well as the ways in which those technologies affect and are affected by the public health and environmental legislative mandates. It reviews estimates of the contribution of various factors - behaviors and exposures - associated with cancer in this country. Evidence linking today's cancers with past carcinogenic influences has come mainly from epidemiology, which continues to scrutinize aspects of the American lifestyle, for possible associations with cancer. Various tests used to identify substances as carcinogens are analyzed. The assessment examines the use of extrapolation techniques for estimating human carcinogenic risks from test-derived data, and the advantages and disadvantages of the available extrapo lation models. Regulatory laws provide the ultimate framework for the use of the techniques in setting standards for controlling exposures. (Author abstract)

74. METHODOLOGY FOR INVESTIGATING LATE EFFECTS OF THERAPY IN CANCER CLINICAL TRIALS (MEETING ABSTRACT).

Herson J, Strong LC, Elder K
University of Texas System Cancer Center, Houston, TX
Clinical Oncology Society of Australia, November 24-27, 1981, Melbourne, Australia. The Society 70 pp., 1981.

A data base management system has been developed to assess late effects of treatment for pediatric cancer clinical trials patients. Patients enter a System 2000 patient data base on their first clinical trial registration. Achievement of 5 yr survival initiates entry into a SIR (Scientific Information Retrieval) long term survivor data base. To date 700 patients

have been entered. Data elements, which are updated annually, include demographic factors, medical and family history at diagnosis, clinical course. detailed treatment record, environmental exposures and physical, intellectual, developmental, reproductive and progeny status. Standardized medical nosology and pharmacy codes are used wherever possible. This system facilitates cohort analysis of the risk of late effects by time, host and environmental (including treatment) factors. Appropriate methods for reduction of bias and analysis of data will be presented. The methodology will be illustrated with several examples. (no Refs)

GENERAL AND MISCELLANEOUS FACTORS

75. FALLACIES OF LIFE-STYLE CANCER THEORIES.

Epstein SS, Swartz JB
Dept. Occupational and Environmental Medicine, Sch. Public Health, Univ. Illinois Medical Center, Chicago, IL
Ecologist; 11(5):204-209 1981

Overemphasis on 'life-style' theories (LST) of carcinogenesis is criticized. LST postulate that cancer is caused by voluntary exposure to single carcinogenic agents. Emphasis on smoking as a cause of lung cancer overlooks an increase of approx 7%/yr in cancers unrelated to smoking. The increase appears related to increasing industrialization and production of synthetic compounds, most of which have never been tested for carcinogenicity. Many studies consider smoking as a single causative factor in cancer, ignoring possible interactions of smoking with other factors, including occupational or environmental exposure to certain compounds. Analysis of lung cancer rates is complicated by the common failure to distinguish between lung cancers and pleural mesotheliomas or between histological types of lung cancer. Some data indicate that occupational exposure to certain chemicals is accompanied by a shift in lung cancer frequencies from small-cell or squamous carcinomas to other types, such as adenocarcinoma. Among certain occupational groups lung cancer risks appear approx equal for smokers and nonsmokers. Attribution of cancers to dietary factors such as fat is not well supported by data. Variability of factors studied has introduced possible errors into conclusions drawn. Although smoking is indicated as a major factor in cancer, closer attention to environmental and occupational factors is recommended. (47 Refs)

76. CANCER EPIDEMIOLOGY.

Sancho-Garnier H, Flamant R
Departement de Statistique Medicale et Unite de Recherches Statistiques, 94800 Villlejuif, France
Rev Infirm; 31(17):19-27 1981

Standardized cancer mortality rates for 1973 yr set France in third place, behind West Germany, England, and Wales. In France, the overall cancer mortality was 221 per 100,000 inhabitants but men were affected twice as often as women. The increase of cancer mortality rate from 1954-1976 was attributed to the increase in cancer deaths among men due to lung cancer and cancers of the upper gastrointestinal and pulmonary tracts. Deaths from cancer represented about 20% of general mortality and a third of the deaths for men in the 55-75 yr range and for women in the 35-55 yr range. Analytical epidemiology has determined the probable causative factors of various types of cancers. These etiological agents include tobacco, pollution, ultraviolet or ionizing radiation, alcohol, nutrition, hormones, infections, immunology, and genetic factors. Cancer has also been linked to certain immunosuppressive and cytotoxic drugs. Resistance to epidemiological data is steadfast not only because pleasurable pursuits such as drinking and smoking are involved but also because the economic consequences of change are staggering. However, more than half of the cancer cases would be affected by alcohol and tobacco campaigns and by the early screening and treatment of cancers of the breast and uterus. (17 Refs) (In FRE)

77. EPIDEMIOLOGY AND THE STUDY OF CANCER.

Woods NF, Woods JS
Dept. Physiological Nursing, Sch. Nursing, Univ. Washington, Seattle, WA
Cancer Nursing. Marino LB, ed. St. Louis, The C. V. Mosby Company, 635 pp., 1981.

Epidemiology as it relates to cancer is discussed and criteria for causal and noncausal associations are reviewed. Analytic approaches to the etiology of cancer include prospective studies, historic or reconstructed cohort studies, retrospective studies, and cross-sectional studies. Studies of the effectiveness of interventions are described and protocols are defined. Etiologic factors of cancer as determined from epidemiologic studies are diet, lifestyle, and iatrogenic causes. Special problems in assessing causal relationships, screening, cancer surveillance programs, and policy implications from epidemiologic studies are each discussed. (54 Refs)

78. EPIDEMIOLOGY OF CUTANEOUS MALIGNANT MELANOMA.

Balda BR
Dermatologische Klinik und Poliklinik der Universitat, Franenlobstr. 9-11, D-800 0 Munchen 2, W. Germany
MMW; 123(50):1923-1926 1981

Patterns of occurrence and possible causative factors in cutaneous malignant melanoma (MM) are reviewed. MM occurs in 1.8-28.57/100,000 persons, depending on the geographical area studied. A world-wide increase in incidence has been reported with rates increasing as much as 340% in 12 yr. MM occurs most frequently during middle age. Women are affected approx twice as often as men. Survival time after diagnosis is longer for women, however; this may be because MM of the trunk occurs most often in men. Approx 40% of MM carry estrogen receptors, suggesting that hormonal influences affect the incidence and progression of the disease. Avoidance of pregnancy and hormonal contraceptives is therefore recommended for women with MM. Approx 1-7% of MM are related to an autosomal dominant or polygenic factors. In precursor mole syndrome atypical nevi become transformed into MM. A few cases of MM occurring in married couples have been reported that may be due either to infectious factors or to similarities in lifestyle. Ethnic and racial factors affect MM incidence; Celtic or Nordic types showing the highest incidence. Exposure to UV radiation has not been ruled out as a causative factor. Occurrence of MM in locations protected from sunlight suggests that a circulating factor is involved in tumor induction, but no such factor has been demonstrated. (65 Refs) (In GER)

79. WHAT'S NEW IN CUTANEOUS ONCOLOGY: 1981.

Hu CH
Dept. Dermatology, Stanford Univ. Sch. Medicine, Stanford, CA
Taiwan I Hsueh Hui Tsa Chih; 80(10):1071-1073 1981

New findings related to epidemiologic and environmental influences, viral carcinogenesis, and hybridoma technology with emphasis on implications of new findings in clinical medicine are reviewed. Areas of cutaneous oncology discussed are Kaposi's sarcoma, Merkel cell tumor, malignant sweat gland tumor, Langerhans' cell tumor, and cutaneous T cell lymphoma. (no Refs)

80. ETHYLENE DIBROMIDE (EDB). (REVISED).

NIOSH Document Development Branch
Robert A. Taft Lab., National Inst. Occupational Safety and Health, 4676 Columbia Parkway, Cincinnati, OH, 45226
Curr Intell Bull NIOSH (37): 13 pp., 1981.

Toxic and carcinogenic effects of ethylene dibromide (EDB) are reviewed. Recent experimental data has reinforced the conclusion that EDB is carcinogenic in animals and that EDB should be treated as a potential occupational carcinogen in the workplace. A ceiling limit of 0.13 ppm (1.0 mg/cubic meter) over any 15 min sampling period and use of appropriate controls to reduce worker exposure are recommended. Studies have shown a high mortality rate and a statistically significant increase in incidence of benign and malignant tumors of the spleen, mammary gland, and nasal cavity in rats exposed to EDB by inhalation at 20 ppm and fed the standard rat diet. Addition of disulfiram (0.05% by wt) to the diet resulted in an approx ten-fold increase in incidence of hepatocellular carcinomas over exposure to EDB alone. The increased interaction may not necessarily be restricted to disulfiram but may occur with similarly structured compounds such as Thiram, a fungicide and seed disinfectant. Epidemiologic studies of EDB in humans have been inconclusive because of small cohort size, incomplete or missing exposure data, and insufficient latencies to observe carcinogenic effects. Gaseous EDB at concentrations ranging from 0.2 to 2 ppm induced significant numbers of sex-linked recessive lethal mutations in Drosophila melanogaster males. Mutation induction was directly proportional to both exposure time and exposure concentration up to 60 ppm-hr for all cell stages tested. (16 Refs)

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1. AN EVALUATION OF THE GENETIC TOXICITY OF EPICHLORHYDRIN. A REPORT OF AN EXPERT GROUP OF THE INTERNATIONAL COMMISSION FOR PROTECTION AGAINST ENVIRONMENTAL MUTAGENS AND CARCINOGENS.
Sram RJ, Tomatis L, Bridges BA, Clemmesen J
(c/o Lohman), Medical Biological Lab. TNO, P.O. Box 45, 2280 AA Rijswijk, The Netherlands
Mutat Res; 87(3):299-319 1981

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Robert A. Taft Lab., National Inst. Occupational Safety and Health, 4676 Columbia Parkway, Cincinnati, OH, 45226
Curr Intell Bull NIOSH (37): 13 pp., 1981.

3. CHEMICAL CARCINOGENESIS AND SMOKING.
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Can J Public Health; 72(6):381-385 1981

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4. CELLULAR TRANSFORMATION BY RADIATION: INDUCTION, PROMOTION, AND INHIBITION.
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Radiological Res. Lab., Cancer Center/Inst. Cancer Res., Columbia Univ. Coll. Physicians and Surgeons, New York, NY, 10032
J Supramol Struct Cell Biochem; 16(4):311-336 1981

5. EFFECTS OF IONIZING RADIATION ON THE DEVELOPING EMBRYO AND FETUS: A REVIEW.
Hoffman DA, Felten RP, Cyr WH
Bureau Radiological Health, Rockville, MD
Effects of Ionizing Radiation on the Developing Embryo and Fetus: A Review. Available from National Technical Information Service, Springfield, VA, as PB82-115379:, 160 pp., 1981.

DIETARY FACTORS IN CARCINOGENESIS

6. BETA-CARBOLINES, PSYCHOACTIVE COMPOUNDS IN THE MAMMALIAN BODY.
Airaksinen MM, Kari I
Dept. Pharmacology, Univ. Kuopio, P.O. Box 138, SF-70101 Kuopio 10, Finland
Med Biol; 59(4):190-211 1981

7. DIET AND CANCER OF THE LARGE BOWEL.
Zaridze DG
Analytical Epidemiology Programme, Div. Epidemiology and Biostatistics, International Agency for Res. on Cancer, 150 Cours Albert Thomas, 69372 Lyon, Cedex 2, France
Nutr Cancer; 2(4):241-249 1981

8. INFLUENCE OF DIET ON MAMMARY CANCER.
Carroll KK
Dept. Biochemistry, Univ. Western Ontario, London, Ontario, N6A 5C1, Canada
Nutr Cancer; 2(4):232-236 1981

9. ARTIFICIAL SWEETENERS IN RELATION TO THE EPIDEMIOLOGY OF BLADDER CANCER.
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Nutr Cancer; 2(4):213-216 1981

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10. EPIDEMIOLOGY AND THE STUDY OF CANCER.
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11. EPIDEMIOLOGY OF CUTANEOUS MALIGNANT MELANOMA.
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MMW; 123(50):1923-1926 1981
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12. THE SMOKING-INDUCED EPIDEMIC.
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13. HEALTH HAZARDS OF ASBESTOS EXPOSURE.
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14. OVERVIEW OF FINNISH EPIDEMIOLOGIC STUDIES ON OCCUPATIONAL CANCER.
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Scand J Work Environ Health; 7(Suppl4):133-139 1981

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15. ALKYLATION OF DNA AND TISSUE SPECIFICITY IN NITROSAMINE CARCINOGENESIS.
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16. TRANSFORMATION INDUCED BY HERPES SIMPLEX VIRUS: A POTENTIALLY NOVEL TYPE OF VIRUS-CELL INTERACTION.
Hampar B
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19. EPIDEMIOLOGICAL ASSESSMENT OF DIETARY INTAKE.
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Office of Technology Assessment
Office of Technology Assessment, Washington, DC
Assessment of Technologies for Determining Cancer Risks from the Environment. Available from National Technical Information Service, Springfield, VA, as PB81-235400:, 243 pp., 1981.

21. ANTIBODIES SPECIFIC FOR DNA COMPONENTS STRUCTURALLY MODIFIED BY CHEMICAL CARCINO GENS.
Muller R, Rajewsky MF
(c/o Rajewsky) Institut fur Zellbiologie (Tumorforschung), Universitat Essen (GH), Hufelandstrasse 55, Essen 1, W. Germany
J Cancer Res Clin Oncol; 102(2):99-113 1981

22. APPLICATION OF THE MICROBIAL MUTATION TEST IN OCCUPATIONAL HEALTH AND ITS FUTURE PROBLEMS.
Takemura N
Dept. Public Health, Jikei Univ., 25-8, Nishi-Shimbashi 2-chome, Minato-ku, Tokyo, 105, Japan
Sangyo Igaku; 23(4):355-365 1981
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23. ARACHIDONIC ACID TRANSFORMATION AND TUMOR PRODUCTION.
Levine L
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Adv Cancer Res; 35:49-79 1981

24. POLYAMINES IN MAMMALIAN TUMORS PART I.
Scalabrino G, Ferioli ME
Inst. General Pathology, Univ. Milan, 20133 Milan, Italy
Adv Cancer Res; 35:151-268 1981

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ENVIRONMENTAL AND OCCUPATIONAL CARCINOGENESIS

SERIES CK02 No. 82/07

JULY, 1982

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U.S. DEPARTMENT OF HEALTH AND HUMAN SERVICES
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ENVIRONMENTAL FACTORS: POLLUTION

1. FLUORIDATION OF WATER SUPPLIES AND CANCER MORTALITY. I. A SEARCH FOR AN EFFECT IN THE UK ON RISK OF DEATH FROM CANCER.

Cook-Mozaffari P, Bulusu L, Doll R
Medical Res. Council External Staff, Univ. Oxford, Dept. Community Medicine and General Practice, Oxford OX1 3QG, England
J Epidemiol Community Health; 35(4):227-232 1981

Effects of fluoridation of water supplies on cancer mortality were studied for the periods 1959-63, 1969-73, and 1974-78 in Birmingham and six other cities in England and Wales (London, Manchester, Liverpool, Sheffield, Leeds, and Bristol). The deaths were separated according to sex and type of cancer. Birmingham had been fluoridated from late 1964, five cities were not fluoridated, and 5.6% of the population population of Leeds had been fluoridated since 1967. Twelve types of malignancies were individually reviewed. Ongoing changes in population and city boundaries were considered. The av age-standardized death rate changes over time from all cancers for both sexes was not significantly different for Birmingham than for the other cities. Values for specific cancers were not unusually high for Birmingham, either for types afflicting both sexes or those afflicting only one. No evidence was found that any unique factor, such as fluoridation of water supply, affected the death rate from cancer in Birmingham since 1964. (17 Refs)

2. FLUORIDATION OF WATER SUPPLIES AND CANCER MORTALITY. II. MORTALITY TRENDS AFTER FLUORIDATION.

Cook-Mozaffari P, Doll R
Medical Res. Council External Staff, Univ. Oxford, Dept. Community Medicine and General Practice, Oxford OX1 3QG, England
J Epidemiol Community Health; 35(4):233-238 1981

Post-fluoridation cancer mortality data from Birmingham, England was reviewed and compared with that from other English and Welsh cities and cities in the United States, Australia, and New Zealand. A previous report by Burk claiming that cancer mortaliity increased sharply in Birmingham following fluoridation in 1964 was analyzed. Burk's conclusion was erroneous because of misinterpretation of government-supplied data and inexplicable, wrong-direction adjustment of data for the control city, Manchester. Recalcuiation of Burk's data revealed an almost identical rate of change in the crude cancer death rates in the two cities. Another study by Burk of a number of English and Welsh cities arrived at the same conclusion as the first study because of an artefact of the pre- and post-fluoridation time periods chosen for study. Reevaluation of the data again showed no increase in cancer mortality in Birmingham compared with unfluoridated cities. Studies in the United States, Australia, and New Zealand failed to support the concept of a fluoridated-induced increase of cancer mortality. (13 Refs)

3. FLUORIDATION OF WATER SUPPLIES AND CANCER MORTALITY. III. A RE-EXAMINATION OF MORTALITY IN CITIES IN THE USA.

Kinlen L, Doll R
Radcliffe Infirmary, Univ. Oxford, Oxford OX2 6HE, England
J Epidemiol Community Health; 35(4):239-244 1981

Cancer mortality statistics for 1970 broken down by sex, ethnic group, and 10-yr age group were treated by the direct method of standardization, and the results compared with those from the author-favored indirect method to further refute claims of fluoridation-induced increased cancer mortality. Data for 1950 and 1960 were also analyzed. Data were collected for eight of the original 10 control cities (2 cities were omitted because fluoridation began in 1969 and 1970) and a set of the 10 largest unfluoridated cities in 1953 (including 6 of the original 10 cities). Using the direct method with only crude data and four different mortality rates, the results for the two new sets of cities were consistently less favorable to the antifluoridation argument than were the results from the original set. Results of using the direct method were not significantly different from those for the indirect method for any set of cities for 1970, the only year with full data still available. Pooling data from the two full sets of cities did not alter the results and favored the argument for using the indirect method of calculation. (8 Refs)

4. RELATIONSHIP BETWEEN LUNG CANCER AND DISTANCE OF RESIDENCE FROM NONFERROUS SMELTER STACK EFFLUENT.

Greaves WW, Rom WN, Lyon JL, Varley G, Wright DD, Chiu G
Rocky Mountain Center Occupational and Environmental Health, Univ. Utah College Medicine, Building 512, Salt Lake City, UT, 84112
Am J Ind Med; 2(1):15-23 1981

A recent epidemiological study associating lung cancer with residence near nonferrous smelters and implicating arsenic instigated this attempt to discern a distance-related gradation of incidence of lung cancer different from any incidence gradation of non-arsenic associated cancers in the general populace in a 20-km radius of copper or lead-zinc smelters at 10 sites in five western USA states. All smelters had been in operation for at least 20 years. Data from cancer registries and death certificates covering 1970-1977 were used. Smoking habits, occupational history, duration of occupancy of residence at time of cancer diagnosis or death from cancer, and previous residence information were not considered. Data were grouped by sex (214 males with lung and 170 with other cancers; 50 females with lung and 291 with other cancers), age (0-49, 50-70, and greater than 70 years old), and living site within 2-14-km concentric bands around each site. Male/female ratios of lung cancer incidence ranged 2.8-5.8 for sites in any one state, but this ratio for all other cancers was 0.22-0.875. No matter how the band widths were adjusted to fit the residence locations, it was not possible to unequivocally demonstrate a lung cancer incidence greater than that of the other cancers. This negative finding was compared with the published positive findings for poss ible explanations. (26 Refs)

5. MUTAGENICITY AND TERATOGENICITY OF VINYL CHLORIDE MONOMER (VCM): EPIDEMIOLOGICAL EVIDENCE.

Clemmesen J
(c/o P. H. Lohman), Medical Biological Lab. TNO, P.O. Box 45, 2280 AA Rijswijk, The Netherlands
Mutat Res; 98(1):97-100 1982

While there is little evidence to attribute isolated cases of hepatic angiosarcoma to to vinyl chloride monomer (VCM) exposure, it would be important if mutagenic or teratogenic effects of VCM could be demonstrated in the surroundings of factories or in the domestic environment of workers. In support of this thesis, a review of epidemiological studies was made to find supportive evidence in the form of excess infant deaths or birth defects. Although excess birth defects were found in an Ohio study, these could not be attributed to poly-

vinyl chloride (PVC) plants due to the nonuniform distribution within communities having plants and those without them up to 12 miles away. Although excess CNS-malformation in newborns was found in another study, in one of the towns with two PVC plants, none of the parents of involved patients worked at the plants. An attempt to determine infant death rates from pregnancies initiated before and after exposure of the same fathers to VCM or PVC fabrication have been confused by a number of factors. It was concluded that none of these studies were supportive of VCM or PVC plants being responsible for isolated hepatic angiosarcoma, excess infant death rates, or excess birth defects. (8 Refs)

6. THE NEW POLLUTION: GROUND WATER CONTAMINATION.

Burmaster DE
Cambridge, MA
Environment; 24(2):6-13,33-36 1982

Pollution of ground water poses a considerable threat to drinking water supplies. Ground water supplies 25% of water supplies in the United States. Wells in many states have been contaminated by inorganic and organic compounds, including known or suspected carcinogens. Sources of contamination include landfills, industrial dumping, agriculture, accidental leaks and spills, and mining. Measurements of 33 contaminants at sites in various states and risks of various cancers due to specific contaminants are tabulated. Recommendations for study and control of ground water pollution are presented. (35 Refs)

ENVIRONMENTAL FACTORS: COMMERCIAL PRODUCTS

7. CANCER OF THE OESOPHAGUS AND THE USE OF TOBACCO AND ALCOHOLIC BEVERAGES IN TRANSKEI, 1975-6.

McGlashan ND, Bradshaw E, Harington JS
(c/o Harington) Natl. Cancer Assoc. South Africa, P.O. Box 2000, Johannesburg 2000, South Africa
Int J Cancer; 29(3):249-256 1982

A large questionnaire-based sample survey over a period of 2 yr has collected information on tobacco and alcohol use among young and old, male and female respondents in three regions of Transkei selected on the basis of having proved contrasts of incidence experience from esophageal cancer. Results show significant gradients of social fabric and of customary usage of tobacco and alcohol across the three incidence regions. In particular the concept is supported of a synergistic relationship between tobacco and alcohol when both are used by one individual, with the major role being played by tobacco, especially when smoked in pipes. Stress is also laid on contrasts between old and young on the assumption that dynamic shifts of mortality may be expected to follow as the young of today alter the patterns of intake established by their elders. (Author abstract) (10 Refs)

ENVIRONMENTAL AND OCCUPATIONAL FACTORS: RADIATION

8. SOLAR RADIATION AND MALIGNANT MELANOMA OF THE SKIN.

Houghton AN, Viola MV
Memorial Sloan-Kettering Cancer Center, 1275 York Ave., New York, NY, 10021
J Am Acad Dermatol; 5(4):477-483 1981

Solar radiation is discussed in relation to the pathogenesis of malignant melanomas (MM) of the skin. The incidence of MM in relatively homogeneous white populations in North America, northern Europe, and Australia is inversely proportional to latitude. MM tends to occur on sites more heavily exposed to sun during recreation. MM is more likely to develop in lightly pigmented individuals. Susceptible persons who have lived in a sunny climate all of their lives have a higher incidence of MM than persons who have recently moved to the same area from less sunny climates. A higher incidence of MM seems to occur in areas with extensive coastlines. MM is more frequent in the summer. MM rates are considered in terms of indoor and outdoor occupations. Sunspot cycles seem to be correlated with subsequent increases in MM incidence rates. Max sunspot numbers coincide with periods of increased solar activity. The rise in MM incidence 0-3 yr after sunspot peaks suggests that heavier exposures to UV radiation trigger the clinical appearance of MM. Solar radiation is considered as a dose-dependent carcinogen and as a cocarcinogen or promoter. (34 Refs)

OCCUPATIONAL FACTORS: SPECIFIC AGENTS OR INDUSTRIES

9. RISK OF CANCER IN THE NORWEGIAN ALUMINIUM INDUSTRY.

Andersen A, Dahlberg BE, Magnus K, Wannag A
Cancer Registry Norway, Montebello, Oslo 3, Norway
Int J Cancer; 29(3):295-298 1982

The study comprises 7,410 male employees from the Norwegian primary aluminium industry, and presents overall mortality as well as cancer incidence. During the period 1953-79, 428 new cases of cancer were observed compared to the expected number of 412.2. The only statistically significant difference for the four investigated plants combined was cancer of the lung with 57 observed against 35.9 expected cases. The increased risk was almost solely confined to two subgroups in processing departments, workers with a short duration of employment and workers with a very long duration of employment in th e older plants. These results were difficult to interpret because of the problems in selecting the appropriate reference population for estimation of expected number of cases of lung cancer. Furthermore, the individual occupational histories were incomplete and there was no information on smoking habits. In order to determine whether there is an excess risk for workers with long periods of employment in the newer plants, it is necessary to wait for another 10-20 yr, when more conclusive data will become available. (Author abstract) (4 Refs)

10. ON THE INTERACTION BETWEEN OCCUPATIONAL ARSENIC EXPOSURE AND SMOKING AND ITS RELATIONSHIP TO LUNG CANCER.

Pershagen G, Wall S, Taube A, Linnman L
Natl. Inst. Environmental Medicine, PO Box 60 208, S-104 01 Stockholm, Sweden
Scand J Work Environ Health; 7(4):302-309 1981

The case-referent technique was employed in a study of deaths due to cancer of the trachea, bronchus, or lung among 3,958 men (cases) employed for at least 3 mo at a copper smelter over a period of 40 yr. Two age-matched referents who had not died of these cancers were chosen for each case. In relation to smoking, if the standardized rate ratios (SRR) among nonsmokers not exposed to arsenic is taken as 1.0, that of nonsmokers exposed to As was 3.0. Among smokers, the SRR for no As exposure and As exposure were 4.9 and 14.6, respectively. SRR in those exposed to high sulfur, or high As, and in roaster workers, were 6.5, 14.7 and 22.0 in smokers, compared to 1.8, 1.2, and 4.4, respectively in nonsmokers. Exposures to As and/or smoking could explain 85% of the cancer deaths among the smelter workers. The results indicate a multiplicative, rather than an additive effect between tobacco smoking and As exposure. Decreasing either one of the exposures or separating them could produce a strong preventive effect on lung cancer. (35 Refs)

11. INFLUENCE OF ARSENIC EXPOSURE AND SMOKING ON LUNG CANCER AMONG SMELTER WORKERS: A PILOT STUDY.

Higgins I, Welch K, Oh M, Bond G, Hurwitz P
Dept. Epidemiology, Univ. Michigan, Ann Arbor, MI
Am J Ind Med; 2(1):33-41 1981

The purpose of this epidemiological study was to determine, primarily, if the dose-response relationship derived from a subset of workers would justify an expanded study, and secondarily, the relative importance of smoking habits. A group of 150 'heavy exposure' (HE) workers, and a random group of 150 'all other exposure' (AOE) workers were followed for a 14-yr period, regardless of continued employment at the smelter. Their exposures to arsenic were estimated from duration of employment in each of 12 departments which had been assayed at various intervals, and also in 18 departments arbitrarily assigned the lowest arsenic level found on the site. Veracity of 'proxy' reports on smoking habits of individuals no lon ger employed was independently examined to the satisfaction of the authors. Mortality from lung cancer was significantly (p less than 0.01) higher than normal in both groups, but only the incidence in the cigarette-smoking category in the HE group was assigned individual significance. Failure to 'assign' individual significance to this category in the AOE group may be the result of a typographical error. Regrouping the 300 workers into high, medium, and low exposure categories revealed p less than 0.01 significance for overall and lung cancer mortality in the high group, and p less than 0.05 significance for the overall mortality in the medium group. Results were considered worthy of a larger scale study. (5 Refs)

12. ARSENIC EXPOSURE IN A COPPER SMELTER AS RELATED TO HISTOLOGICAL TYPE OF LUNG CANCER.

Wicks MJ, Archer VE, Auerbach O, Kuschner M
(c/o Auerbach), Veterans Administration Hosp., East Orange, NJ
Am J Ind Med; 2(1):25-31 1981

This epidemiological study was conducted to confirm as inconclusive the report of increased incidence of adenocarcinomas in lung cancers of persons exposed to arsenic, this information having potential use as a marker for arsenic when investigating excess respiratory cancer incidence. Data on smelter workers from 1950 to 1974 came from death certificates. Data for the general population controls came from the local tumor registry. Controls were matched closely with smelter workers for dates of birth and death. The number of controls was insufficient to also match smoking histories, but the same ratio of nonsmokers to former smokers was maintained. Reevaluation was done on 42 workers and 46 controls using preserved tissue blocks or original tissue slides. Tissue samples were source-identified as autopsy, large or small biopsy, or cell block. Three pathologists reevaluated all slides, unidentified as to origin, according to the WHO classification system, setting aside type 1C (poorly differentiated epidermoid). Majority opinion ruled when disagreements were not resolved by repeated examination. Increased adenocarcinoma incidence was the only statistically significant (p less than 0.05) positive difference in the workers. Inclusion of 1C classifications did not alter the results. The only significant finding of the earlier study had been increased incidence of type 1C carcinoma. A number of explanations were offered for the different findings. (35 Refs)

13. ASBESTOS-RELATED DISEASES.

Casey KR, Rom WN, Moatamed F
Building 512, RMCOEH, Univ. Utah Medical Center, Salt Lake City, UT, 84112
Clin Chest Med; 2(2):179-202 1981

Exposure to asbestos is associated with development of nonmalignant pleural diseases (pleural thickening, hyaline and calcified plaques, effusion), diffuse interstitial pulmonary fibrosis (asbestosis), diffuse malignant mesothelioma of the pleura and peritoneum, carcinoma of the lung, and possibly other neoplasms of other tissues. Types of asbestos minerals, chemical and physical properties, exposure, and biological effects of asbestos are reviewed. Epidemiology, pathology, clinical features, radiographic appearance, immunology, diagnosis, course, and prognosis of the various asbestos-related diseases are discussed. (226 Refs)

14. TWENTY-YEAR FOLLOW-UP STUDY ON HEALTH OF EMPLOYEES IN AN ASBESTOS PLANT.

Nabeshima K
Second Dept. Internal Medicine, Nara Medical Univ., Nara, Japan
Nara Igaku Zasshi; 32(5):495-507 1981

A 20-yr follow-up study on the health of 152 asbestos workers (125 men, 27 women) who had worked for various periods of time in an asbestos factory since 1960 was reported. Duration of employment was 0-9 yr for 66 workers (Group A), 10-14 yr for 52 (Group B), 15-19 yr for 16 (Group C), and greater than 20 yr for 18 (Group D). Concentrations of asbestos dust in the factory were measured by different methods as monitoring technologies changed. Concentrations of fibers less than 5 microns long averaged 17.0 mg/cubic meter (m3) in 1952 and 43.6 mg/m3 in 1955 (impinger method), those of fibers under or over 5 microns long averaged 400.4 mg/m3 in 1957 (impinger method), those of fibers greater than 5 microns long averaged 0.93 mg/m3 in 1972 and av 0.48 mg/m3 in 1975 (digital counter method), and those of fibers greater than 5 microns long averaged 0.50 fibers/ml in March, 1979 and 0.86 fibers/ml in October, 1979 (membrane filter method). X-ray findings of the workers were divided into categories 0, 1, 2, and 3, representing increasing severities of asbestosis. In 1960, 64 Group A,

29 Group B, 3 Group C, and 2 Group D workers had Category 0 findings; 2 Group A, 21 Group B, 3 Group C, and 12 Group D workers had Category 1 findings; and 0 Group A, 2 Group B, 5 Group C, and 4 Group D workers had Category 2 findings. Of the 43 workers with Category 1 findings, 16 died (9/16 from pulmonary asbestosis), and all 11 of the Category 2 workers died of asbestosis. Malignant tumors were observed in 6/20 workers who died. In 1960, five of these six cancer patients (4 pulmonary carcinomas, 1 peritoneal mesothelioma) had Category 1 findings and one (pulmonary carcinoma) had a Category 2 finding. All of five workers who had cancer as a complication and who had changes in x-ray findings from one category to a higher one during 1960-1980 were heavy smokers. (39 Refs) (In JPN)

15. DETERMINANTS OF CANCER AND CARDIOVASCULAR DISEASE MORTALITY IN ASBESTOS MINING COUNTIES OF CALIFORNIA.

Ziskind RA, Smith DF, Hahn JL, Spivey G

Science Applications, Inc., Los Angeles, CA

Determinants of Cancer and Cardiovascular Disease Mortality in Asbestos Mining Counties of California. Available from National Technical Information Service, Springfield, VA, as PB81- 208985:, 115 pp., 1981.

The purpose of this work was to design an epidemiological study protocol to further evaluate the hypothesis that asbestos related health effects have been observed among populations without occupational exposure. A case-control mortality protocol was developed. The hypothesis was formalized as deaths due to respiratory tract cancer, mesothelioma, and cardiovascular disease are associated with length of residence proximal to asbestos mining activities after controlling for the effects of cigarette smoking, occupation and genetic susceptibility. Study areas selected were the two commercial asbestos mining and milling regions of California. Anthropogenic and natural emission sources of asbestos were delineated. In concert with protocol design a questionnaire for survivors was drafted, pretested, reused and submitted. California death certificate tapes from 1970 will be utilized to define the study subjects and examine mortality in the prime study areas - Calaveras and Tuolumne Counties. (Author abstract)

16. ASBESTOS-RELATED DISEASES IN THE FEDERAL REPUBLIC OF GERMANY.

Woitowitz HJ, Beierl L, Rathgeb M, Schmidt K, Rodelsperger K, Greven U, Woitowitz RH, Lange HJ, Ulm K

Inst. and Polyclinic Occupational and Social Medicine, Univ. Giessen, Aulweg 129/III, 6300 Giesser, W. Germany

Am J Ind Med; 2(1):71-78 1981

Preliminary results of a prospective epidemiological study on almost 3,000 ex-asbestos workers from 1977-1980 were limited to analysis of the 85 deaths. The study required at least 3 yr exposure and 9 yr elapsed time since first exposure. The standardized proportional mortality ratio for the 12 indisputable lung cancer deaths had a significance of p less than 0.05. No ratio could be calculated for the 5 pleural and peritoneal mesothelioma cases due to their low incidence in the general populace. (14 Refs)

17. CANCER MORTALITY IN A PIGMENT PLANT UTILIZING LEAD AND ZINC CHROMATES.

Sheffet A, Thind I, Miller AM, Louria DB

Dept. Preventive Medicine and Community Health, Univ. Medicine Dentistry New Jersey - New Jersey Medical Sch., 100 Bergen St., Newark, NJ, 07103

Arch Environ Health; 37(1):44-52 1982

Several studies of workers exposed to various forms of chromium compounds have suggested an increased incidence of respiratory cancers. Lead and zinc chromates were among the chromium compounds implicated. The Department of Preventive Medicine and Community Health of the New Jersey Medical School undertook a detailed mortality study of a pigment plant in Newark which utilized both of these compounds. We compared observed deaths from each cause among 1,296 white and 650 non-white males who were employed at the plant between January 1, 1940 and December 31, 1969, with expected deaths, as computed from cause-, age-, and time-specific standard death rates for the United States. A statistically significant relative risk of 1.6 for lung cancer among white male employees was found, as well as among the cohorts of white males employed 10 yr or more. A relative risk of 1.9 was noted for individuals employed at least 2 yr who were at lest moderately exposed to chromates. An increased incidence of lung cancer among non-white males and stomach and pancreatic cancer among the total cohort was also evident. These data support the validity of the association between chromate pigment exposure and lung cancer, suggesting that pigment workers and others exposed to chromate be observed carefully in regard to possible risk of pancreatic and stomach cancers. (Author abstract) (24 Refs)

18. FARMING AND MORTALITY FROM NON-HODGKIN'S LYMPHOMA: A CASE-CONTROL STUDY.

Cantor KP

Environmental Epidemiology Branch, NCI, 3C08 Landow Bldg., Bethesda, MD, 20205

Int J Cancer; 29(3):239-247 1982

A case-control study of non-Hodgkin's lymphoma (NHL) and its subtypes among males was conducted using computerized mortality listings from the State of Wisconsin for the years 1968-1976. Age, year of death, race, county of usual residence, marital status, and usual occupation were abstracted for the 774 records of male deaths due to NHL and a matched series of deaths due to other causes. The frequency of farming occupation among NHL cases was compared to the frequency among controls, and odds ratios (OR) were calculated. Farming was more common among cases than among controls (OR = 1.22). The association of NHL with farming occupation was greater among decedents under 65 yr of age (OR = 1.7) than among those who were older. The younger decedents were at higher risk of reticulum-cell sarcoma (OR = 2.7) than of other cell types. The strength of the association increased over the 9-yr study period. County levels of selected agricultural characteristics were used as surrogate measures of farming exposures in residence counties of farmers and were summarized by factor analysis. Major findings were of elevated risk among younger farmers for reticulum-cell sarcoma in counties high in summary measures of general agricultural activity (OR = 3.2), of small grain acreage and acres treated with insecticides (OR = 6.6), and of wheat acreage (OR = 4.4). Given the limitations of the data, further investigation of non-Hodgkin's lymphoma in farmers is warranted. (Author abstract) (46 Refs)

19. SURVEY AMONGST WORKERS IN PESTICIDE FACTORIES.

Bhatnagar VK, Saigal S, Singh SP, Khemani LD, Malviya AN
Dept. Biochemistry, S.N. Medical Coll., Agra 282 002, India
Toxicol Lett; 10(2/3):129-132 1982

Clinical signs and blood parameters among 75 pesticide factory workers was investigated. Reported clinical signs included loss of appetite, nausea, headache, giddiness, vertigo, fatigue, and muscular cramps. Overall, pulse rate, blood pressure, and central nervous system evaluation were normal; however, 68 subjects were underweight. Blood parameters revealed significantly low cholinesterase activity in 53 subjects. Blood urea and blood sugar levels were also below av. Serum cholesterol levels were significantly higher in test subjects, but serum phospholipid levels showed an insignificant rise. (18 Refs)

20. AMPHIBOLE FIBERS IN A TACONITE MINE AND IN THE LUNGS OF THE MINERS.

Gylseth B, Norseth T, Skaug V
Inst. Occupational Health, P.O. Box 8149 Dep, Oslo 1, Norway
Am J Ind Med; 2(2):175-184 1981

Part of a combined epidemiological and hygienic survey of an open-pit taconite mine, fiber concentrations in the working atmosphere and fiber content in lung tissue from two previously exposed miners are presented. Total dust exposure recorded along the production line from the primary mining operation to the final shipping of iron pellets was 0.5 mg/cubic meter in the control rooms to 36 mg/ cubic meter in the crushing plant. Fiber concentration varied (0.01-0.9 fibers/cc). The highest fiber concentration was recorded in the pre-separation area. Energy dispersive x-ray (EDS) microanalysis of the fibers showed amphiboles with EDS-spectra as hornblende or actinolite and cummingtonite-grunerite amphiboles. Lung tissue analysis of the 55-yr-old male who had been employed in the mine for 27 yr showed clinical and radiological signs of cancer of the left lung half a yr before death. Despite radiotherapy followed by temporary improvement, the patient died 1 mo after admission to hospital. Dust-laden macrophages were conspicuous in the distal peribronchial areas where fibrosis was found. The second patient (61 yr old) employed at the mine for 36 yr, worked on a less dusty place last 8 yr because of radiological signs of silicosis. Lobectomy of the left lung was performed after diagnosis of lung cancer, poorly differentiated squamous cell carcinoma. The patient did not recover and died 3 wk later. Autopsy revealed presence of silicotic nodules in both lungs and in the hilar lymph nodes. Amphibole bodies might penetrate to the alveoli and be attacked by alveolar defense mechanisms in a way similar to what occurs with asbestos fibers, and act as contributing factor to cancer. (10 Refs)

21. HOST ROCKS AND GANGUE MINERALS IN RELATION TO PNEUMOCONIOSIS AND CANCER.

Langer AM
Environmental Sciences Lab., Mount Sinai Sch. Medicine, New York City, NY
Am J Ind Med; 2(2):89-90 1981

Studies on association between the occurrence of some specific diseases in taconite miners and exposure to fibrous amphibole gangue minerals originating from both crushed and processed ore and host rock are reviewed. Many ore deposits are contaminated with agents of known activity, but their presence goes unnoticed or undetected, either because they are gangue materials of no value to the company, or are submicroscopic. Data on biological activity are not yet available for a number of fibrous minerals whose presence is known in a number of ore deposits. (6 Refs)

22. MORTALITY PATTERNS AMONG WORKERS IN THREE TEXAS OIL REFINERIES.

Thomas TL, Waxweiler RJ, Moure-Eraso R, Itaya S, Frasmeni JF
Occupational Studies Section, Environmental Epidemiology Branch, NCI, Bethesda, MD, 20205
JOM; 24(2):135-141 1982

The cause-specific mortality experience of 2,509 active and retired members of the Oil, Chemical, and Atomic Workers International Union (OCAW) who worked at three oil refineries in the Beaumont/Port Arthur area of Texas was examined to determine whether there might be unusual patterns of fatal disease related to workplace exposures. Deaths that occurred between 1943 and 1979 were identified from membership records of the OCAW headquarters in Denver and from the records of Union locals in Texas which represent workers at the three refineries. Death certificates were obtained from state vital records offices for the decedents. Cause-specific Proportionate Mortality Ratios (PMRs) were calculated using the mortality experience of the US general population as a standard. Excess mortality from stomach cancer occurred among active union members who worked at Refinery A and among active and retired members who worked at Refineries B anc C. PMRs for leukemia, multiple myeloma, and other lymphomas were elevated, especially among retired workers. Relative frequencies of brain tumor deaths were significantly elevated among active members at all three refineries and slightly elevated among retirees at Refineries A and C. Findings suggest that oil refinery workers may have elevated risks of these cancers and indicate that more definitive studies are necessary. (Author abstract) (22 Refs)

23. EPIDEMIOLOGIC STUDY OF REFINERY AND CHEMICAL PLANT WORKERS.

Hanis NM, Holmes TM, Shallenberger LG, Jones KE
Exxon Corporation, P.O. Box 235, E. Millstone, NJ, 08873
JOM; 24(3):203-212 1982

A dynamic retrospective cohort study was performed to examine the mortality experience of workers at Exxon's Baton Rouge, La, refinery and chemical plant. Included were 8,666 regular employees who worked at least 1 mo during the period January 1, 1970 through Dec 31, 1977, and retirees who were alive as of Jan 1, 1970. Mortality from all causes of death was lower than expected when compared with that of the U S population of similar age, sex, and race. Analyses of mortality by specific site of cancer revealed elevated standardized mortality ratios (SMRs) for cancer of the kidney, testis, brain/central nervous system, pancreas, and lymphopoietic sites; none of these elevations was statistically significant. Bec ause of the higher than av mortality from cancer of the pancreas in some Louisiana parishes and the observation that one additional death from cancer of the pancreas in this study would have resulted in a statistically significant SMR at the 95% confidence level, some emphasis was placed on this finding. No evidence was found to link cancer of the pancreas to a specific occupational group. An examination of mortality by occupational class revealed some elevated SMRs for further study. (Author abstract) (24 Refs)

24. AN APPLICATION OF THE SWEDISH CANCER-ENVIRONMENT REGISTRY. LEUKAEMIA AMONG TELEPHONE OPERATORS AT THE TELECOMMUNICATIONS ADMINISTRATION IN SWEDEN.

Wiklund K, Einhorn J, Eklund G
Cancer-Environmental Registry, Planning Div. 3, Statistical Office Natl. Board of Health and Welfare, S-106 30 Stockholm, Sweden
Int J Epidemiol; 10(4):373-376 1981

The detection of four cases of leukemia among telephone operators at the Telecommunications Administration in Gothenburg within a period of 6 yr (1969-74) evoked disquiet among the employees. Following an inquiry to the National Board of Health and Welfare, a retrospective study was undertaken with a view to examining whether this incidence was consistent with the risk for the country as a whole. The study was based on the newly established Cancer-Environment Registry for the period 1961-73 covering the entire country. This was the first occasion on which the Registry had been applied in an investigation of cancer risk for a specific occupational group. The analysis disclosed no higher risk of leukemia among telephone operators in the Telecommunications Administration in Sweden than among the population as a whole. (Author abstract) (5 Refs)

25. A HEMATOLOGY SURVEY OF WORKERS AT A STYRENE-BUTADIENE SYNTHETIC RUBBER MANUFACTURING PLANT.

Checkoway H, Williams TM
Sch. Public Health, Univ. North Carolina, Chapel Hill, NC, 27514
Am Ind Hyg Assoc J; 43(3):164-169 1982

Workplace exposures to styrene, butadiene, benzene, and toluene were quantified and related to measurable hematologic parameters. Mean 8 hr time weighted av for these chemicals varied according to sample location, but did not exceed recognized threshold limit values. Significant Pearson product moment correlations of blood parameters with butadiene and styrene exposures were found. Multiple regression analyses also revealed blood variations associated with styrene and butadiene. The most pronounced blood variations were among workers with the highest exposure, suggesting a possible biologic effect. (40 Refs)

26. BENZENE IN BLOOD AND PHENOL IN URINE IN MONITORING BENZENE EXPOSURE IN INDUSTRY.

Bruler L, Levy A, Dror K, Pardo A
Sackler Medical Sch., Dept. Physiology and Pharmacology, Tel Aviv Univ., Ramat-Aviv, Israel
Am J Ind Med; 2(2):119-123 1981

A survey was conducted to clarify the respective value of gas chromatographic measurements of benzene (BE) in blood and phenols (PH) in urine in workers chronically exposed to low levels of BE (less than 10 ppm) in the work-place atmosphere. Study was carried out on two different groups of workers, known to be potentially exposed to BE. Hematologic surveillance, measurement of PH in urine, and determination of BE in the exhaled breath are the main biological monitoring methods currently used for the detection of BE exposure in industry. Measurement of PH in urine has been used for assessing BE risk in industry. The PH test is an indirect method based on the assumption that 20-40% of BE is metabolized to PH. Demonstration of BE in blood provides: a more sensitive and specific test for estimating BE exposure and BE uptake among people handling materials with low BE contents; detection of unexpected BE risk in subjects using consumer products sold under proprietary or equivocal names; detecting of residual persistent 'benzenemia' as indication of a state of individual sensitivity to BE toxicity; and better understanding of the metabolism of BE in the body. Preliminary results indicated that determination of BE in blood is more reliable than PH tests for assessing exposure and uptake of BE. Normal values of PH in urine (10 mg/liter) were found in almost all cases in which BE was detected in the blood. (18 Refs)

27. INCIDENCE OF CHROMOSOME ABERRATIONS IN WORKERS OF TIRE AND RUBBER INDUSTRIES.

Aleksandrov SE
State Medical Inst., Yaroslavl, USSR
Genetika; 18(1):161-163 1982

The results of cytogenetic study of female workers of the tire and rubber industry are reported. The incidence of chromosomal aberrations was studied in peripheral blood lymphocytes and in the embryonal tissue obtained during abortions. The increase of the frequency of aberrant metaphases was observed both in lymphocytes (2.63%, compared with 1.14% in controls) and in the embryonal tissue (6.33% vs 1.0%). (7 Refs) (In RUS)

28. POLYCHLORINATED BIPHENYL EXPOSURE IN TRANSFORMER MAINTENANCE OPERATIONS.

Moseley CL, Geraci CL, Burg J
U.S. Dept. Health and Human Services, Natl. Inst. for Occupational Safety and Health, 4676 Columbia Parkway, Cincinnati, OH, 45226
Am Ind Hyg Assoc J; 43(3):170-174 1982

Exposure to polychlorinated biphenyl (PCB) during transformer maintenance operations and pre- and post-maintenance ambient air PCB concentrations were assessed. Breathing zone PCB levels during maintenance ranged from 1.9 to 55.0 ug/cubic meter (m3). PCB levels outside the transformer room ranged from non detectable to 2.6 ug/m3 meter during maintenance, but subsequently declined to pre-maintenance levels. Seventy-nine percent of personal exposures (ranging from 0.1 to 60.0 ug/m3) exceeded recognized 8 hr time weighted av. Closer evaluation of the work process is needed to minimize worker PCB exposure. (23 Refs)

29. CARCINOGENIC ACTIVITY OF VINYL CHLORIDE (DATA OF CLINICO-HYGIENIC AND EPIDEMIOLOGICAL STUDY).

Filatova VS, Antoniuzhenko VA, Smulevich VB, Fedotova IV, Kryzhanovskaia NA, Bochkareva TV, Goriacheva LA, Bul'bulian MA
Res. Inst. Industrial Hygiene and Occupational Diseases, Gorky, USSR
Gig Tr Prof Zabol; (1):28-31 1982

Incidence of malignant tumors was studied in workers who had an occupational exposure to vinyl chloride (VC) and polyvinyl chloride (PVC). Group 1 was exposed to VC at greater than 300 mg/cubic meter (m3), Group 2 was exposed to VC in concentrations of 30-300 mg/m3, and Group 3 was exposed to VC in concentrations of less than 30 mg/m3. Analysis of cancer morbidity showed that 31.7% had stomach cancer, 26.9% had lung cancer and 14.3% had lymphatic and hematological malignancies. Cancer mortality index in Groups 1, 2, and 3 was 1.4, 1.3, and 0.6, respectively. Cancer mortality depended upon the duration of exposure. (15 Refs) (In RUS)

30. RESULTS OF SPUTUM CYTOLOGY AMONG WORKERS EXPOSED TO VINYL CHLORIDE MONOMER AND TO POLY(VINYL CHLORIDE).

Maltoni C, Lodi P
Inst. Oncology, Bologna, Italy
Environ Health Perspect; 41:85-88 1981

Systematic cytological examinations of sputum were performed in 3380 workers exposed to vinyl chloride monomer (VC), some of whom were also exposed to poly(vinyl chloride) (PVC). Results were compared with those from 2,287 workers in other industries with different potential risks. VC-PVC workers had a higher incidence of cellular abnormalities and dysplasias in the respiratory tract than other workers. Results suggest a risk of upper respiratory oncogenesis among VC-PVC workers. (5 Refs)

31. OBSERVATIONS OF THE SITE-SPECIFIC CARCINOGENICITY OF VINYL CHLORIDE TO HUMANS.

Infante PF
Office Carcinogen Identification and Classification, Health Standards Program, Occupational Safety and Health Admin., U. S. Dept. Labor, Washington, DC, 20210
Environ Health Perspect; 41:89-94 1981

Studies of site-specific carcinogenicity of vinyl chloride (VC) are reviewed. Problems encountered included relative insensitivity to carcinogenic response at low risk sites due to small sample size, and characteristics of method and design that prevent adequate interpretation of results. Restriction of disease definition resulted in obscuring some sites that might otherwise have shown significant excess risk. Four of eight studies indicated a significant risk of liver cancer following exposure to VC, although the liver had been confirmed as a site of VC-carcinogenesis by other studies. Problems with studies of liver cancer included insufficient exposure and observation times. Some studies classify liver cancer with other cancers of the digestive tract. Overall data from at least one study of cancers of the digestive tract indicate a reduction in mortality among exposed workers. An excess of mortality due to CNS cancers was indicated by five of eight studies. Some studies classified CNS cancers with nonspecific 'other' categories. Data for lung cancer mortality suggest a significant increase in risk for workers exposed to VC. Data for cancers of the lymphatic and hematopoietic systems are suggestive but not conclusive. Overall data indicates that the carcinogenic effect of VC is not limited to the liver. (12 Refs)

32. GERMAN INVESTIGATIONS ON MORBIDITY AND MORTALITY OF WORKERS EXPOSED TO VINYL CHLORIDE.

Weber H, Reinl W, Greiser E
Staatlicher Gewerbearzt, Dusseldorf, W. Germany
Environ Health Perspect; 41:95-99 1981

Morbidity and mortality among workers of German or Austrian nationality exposed to vinyl chloride monomer (VCM) were studied. Standardized mortality ratios (SMR) were calculated. SMR for workers exposed to VCM were compared with those for the West German male population, chemical workers not exposed to VCM, and workers exposed to polyvinyl chloride (PVC). Cause of death could not be determined in 7.3-13.1% of cases. Data from VCM and PCV workers did not show a 'healthy worker' effect. Among VCM workers, SMR were elevated for malignancies of the lymphatic and hematopoietic systems and for malignancies of the gastrointestinal (GI) tract. The increase in SMR for GI cancers was due to an increase in deaths due to liver cancers. SMR for liver cancers was also somewhat elevated for workers not exposed to VCM; cause of the elevation was uncertain. SMR for ischemic heart disease was elevated for all three groups of workers. SMR for liver cancers increased with time of exposure to VCM, suggesting a time-response relationship. A dose-response relationship could not be established due to lack of dose determinations. SMR for cancers in general and for liver cancers were particularly high for men 35-44 yr old. A study of morbidity indicated 269 cases of suspected occupational disease among 6,500 workers in VCM or PVC production and 42,800 workers in PVC processing. (2 Refs)

33. EPIDEMIOLOGIC STUDY OF VINYL CHLORIDE WORKERS: MORTALITY THROUGH DECEMBER 31, 1972.

Cooper WC
2150 Shattuck Ave., Suite 401, Berkeley, CA, 94704
Environ Health Perspect; 41:101-106 1981

A survey of the vital status of 9,677 men working for at least 1 yr with probable exposure to vinyl chloride monomer (VCM) showed that 707 workers had died. Standardized mortality ratios (SMR) calculated for 699 deaths were 89 for all causes and 104 for malignancies. The only types of malignancy found in significant excess were neoplasms of the brain and other parts of the nervous system: 5.9 deaths were expected but 12 occurred, for an adjusted SMR of 203. No significant differences were found among workers with less than 20 yr, greater than 20 yr, or greater than 25 yr exposure to VCM. (6 Refs)

34. EPIDEMIOLOGY OF HEPATIC ANGIOSARCOMA IN THE UNITED STATES: 1964-1974.

Falk H, Herbert J, Crowley S, Ishak KG, Thomas LB, Popper H, Caldwell GG
Chronic Diseases Div., Center Environmental Health, Centers Disease Control, Public Health Service, U. S. Dept. Health and Human Services, Atlanta, GA, 30333
Environ Health Perspect; 41:107-113 1981

The occurrence of hepatic angiosarcoma (HAS) in the United States was studied for the period 1964-1974. Death certificates were reviewed in 22,432 cases of death due to liver tumors. Based on examination of medical records and pathological specimens, 168 cases of HAS were confirmed. Of cases identified as HAS on death certificates, only 42% were confirmed as HAS by other evidence; 50% were confirmed as not HAS. Only 23% of confirmed cases of HAS would have been identified by a search of death certificates alone. Inadequacies in epidemiological studies are indicated. HAS occurred predominantly in men (male:female ratio 3:1) and more frequently in the younger age groups. The mean age was 50.1 yr for women and 57.9 yr for men. Of 127 men with HAS, 12 had been exposed to vinyl chloride (VC), 15 to Thorotrast (TT), 4 to inorganic arsenic (As), and 3 to androgenic-anabolic steroids (AAS); 93 cases were classified as idiopathic. Of 41 women with HAS, 5 had been exposed to TT, 2 to As, and 1 to AAS; 33 cases were classified as idiopathic. A relationship between HAS and VC, TT, or AAS was more common in the latter part of the study period, probably due to recent introduction of VC and AAS and a long latency period for TT. The mortality rate for HAS was 0.75 cases/10(7) population/yr. The mortality rate was apparently higher in industrialized areas of the Northeast and Midwest and lower in farming states and the South; differences in rates for different areas may have been

due to reporting methods rather than to actual differences in occurrence. Four agents have been identified as probable causative factors in HAS, but 75% of cases are of uncertain etiology. (28 Refs)

35. WORKER EXPOSURE TO VINYL CHLORIDE AND POLY(VINYL CHLORIDE).

Jones JH
Div. Surveillance, Hazard Evaluations and Field Studies, Natl. Inst. Occupational Health and Safety, 4676 Columbia Parkway, Cincinnati, OH, 45226
Environ Health Perspect; 41:129-136 1981

Industrial hygiene studies were conducted among workers at three vinyl chloride (VC) monomer (VCM) plants, three vinyl chloride polymerization (VCP) plants, and seven polyvinyl chloride (PVC) fabrication plants. Exposure to VC was highest among VCP workers and lowest among PVC workers. One job category at VCM plants had exposures greater than 1 ppm. The highest av exposure was 22 ppm. Later studies have shown undetectable levels of VC, although in several cases levels greater than 1ppm were found. (36 Refs)

36. MORTALITY AMONG PVC-FABRICATING EMPLOYEES.

Chiazze L, Ference LD
Div. Biostatistics and Epidemiology, Georgetown Univ. Sch. Medicine, 3750 Reservoir Road, N. W., Washington, DC, 20007
Environ Health Perspect; 41:137-143 1981

Causes of deaths among 3,847 white active and retired workers in 17 plants producing polyvinyl chloride (PVC) which occurred during the period 1964-1973 were studied. Proportionate mortality ratios (PMR) were calculated for various causes and compared with two standards: (1) the age-, sex-, and cause-specific mortality ratio for whites in 1968 and (2) mortality rates for the individual years 1964-1973. When compared with the 1968 standard, PMR for white males were significantly increased for the categories 'all cancers,' 'digestive cancers,' 'respiratory cancers,' and 'other and unspecified cancers.' PMR for white females were significantly increased for the categories 'all cancers,' 'digestive cancers,' 'breast cancer,' 'urinary cancer,' and 'other and unspecified cancers.' When compared with standards for individual years, results were consistent with those for the 1968 standard but PMR were generally lower. Case-control analysis of 44 deaths due to breast cancer suggested an increased risk among PVC workers; the actual increase was not significant, possibly due to sample size. Analysis of sampling methods indicated that the study was capable of detecting only large increases in risk. (14 Refs)

37. MORTALITY AND CANCER RATES AMONG WORKERS IN THE SWEDISH PVC PROCESSING INDUSTRY.

Molina G, Holmberg B, Elofsson S, Holmlund L, Moosing R, Westerholm P
Occupational Toxicology Unit, Dept. Occupational Medicine, Labor Medicine, Div. Dept. Occupational Safety, Box 100, 26 Stockholm, Sweden
Environ Health Perspect; 41:145-151 1981

Mortality and cancer rates were studied among workers employed in the Swedish polyvinyl chloride (PVC) industry for at least 3 mo in the period 1945-1974. Exposure to vinyl chloride (VC) was classified as high, medium, or low. A total of 2,073 workers were surveyed, of whom 103 could not be followed up. Workers were divided into four study cohorts according to length of exposure and follow-up times. When compared with the national mortality rate, no significant increase was found for the total cohort or for any of the study cohorts. A shift in the cause of death compared with the national average was found. The frequency of myocardial infarction was higher during exposure or within a short time after the end of exposure to VC. The frequency of death due to tumors was apparently higher in individuals with long latency times, but no significant difference was found. Although VC has not been proven a cause of myo cardial infarction, the relationship should be considered. The size of two of the study cohorts was too small to permit conclusions regarding the relationship between risk of myocardial infarction and exposure level. (18 Refs)

38. EXCESS LUNG CANCER RISK IN A SYNTHETIC CHEMICALS PLANT.

Waxweiler RJ, Smith AH, Falk H, Tyroler HA
Industry-wide Studies Branch, Div. Surveillance, Hazard Evaluations and Field Studies, Natl. Inst. Occupational Safety and Health, 4676 Columbia Parkway, Cincinnati, OH, 45226
Environ Health Perspect; 41:159-165 1981

The occurrence of lung cancer among workers employed at a synthetic chemicals plant at any time during the period 1942-1973 retrospective cohort study included 4,806 males. Of these, 4,174 were alive at the time of the study and 73 were lost to follow-up but assumed to be alive. At the end of the period studied only 30% of the cohort would have been greater than 54 yr old; 63% had the opportunity to achieve 20 yr latency. When all employees were considereed to be at risk from the start of employment at the plant, the standardized mortality rate (SMR) was significantly elevated for malignant neoplasms of the CNS (SMR 209) and respiratory system (SMR 149). When employees were considered at risk only after 10 yr of employment, results were similar but the SMR was slightly higher. Excess lung cancers were not due solely to exposure to vinyl chloride (VC). A case-comparand study of 27 workers with lung cancer indicated that large-cell undifferentiated type lung cancer (LCLC) occurred more frequently among workers (30%) than among comparands from the community (10%) with lung cancer. Among workers the risk of lung cancer was primarily for LCLC and adenocarcinoma. Analysis of exposure to various chemicals using a serially additive expected dose model indicated poly(vinyl chloride) dust as the most likely etiological agent. The next most likely agent was vinylidene chloride. Latency time peaked at 5-16 yr. (27 Refs)

39. ANGIOSARCOMA OF THE LIVER: A SIGNAL LESION OF VINYL CHLORIDE EXPOSURE.

Vianna NJ, Brady J, Harper P
Bureau Environmental Epidemiology, New York State Dept. Health, Tower Building, Empire State Health Plaza, Albany, NY, 12237
Environ Health Perspect; 41:207-210 1981

The association between exposure to vinyl chloride (VCM) and subsequent occurrence of angiosarcoma of the liver (ASL) is reviewed. Although ASL is a rare tumor, some evidence suggests that incidence of ASL is increasing. ASL occurs more frequently among workers occupationally exposed to VCM than among the general population. ASL may also be related to low-level, nonoccupational exposure to VCM. Other disorders possibly associated with exposure to VCM include cancers of the digestive, respiratory, neurologic, and lymphatic systems. (39 Refs)

40. REVIEW OF EPIDEMIOLOGIC STUDY RESULTS OF VINYL CHLORIDE-RELATED COMPOUNDS.

Apfeldorf R, Infante PF

Office Carcinogen Identification and Classification, Health Standards Programs, Occupational Safety and Health Admin., U. S. Dept. Labor, Washington, DC, 20210

Environ Health Perspect; 41:221-226 1981

Epidemiologic studies of structural analogs of vinyl chloride (VC) are reviewed. Analogs included epichlorohydrin (ECH), trichloroethylene (TCE), vinylidene chloride (VDC), ethylene dibromide (EDB), perchloroethylene (PCE), and carbon tetrachloride (CCl4). Occupational and industrial uses of the compounds include manufacture of epoxy resins (ECH), copolymers and fibers (VDC), petroleum products (EDB), and pesticides (EDB). Other uses include metal degreasing (CCl4, TCE, and PCE) and dry cleaning (PCE and formerly, TCE and CCl4). Bioassays in experimental animals have demonstrated induction of tumors at multiple sites by EDB and CCl4, in the respiratory tract by EDB and ECH, and in the liver by VDC, EDB, TCE, PCE, and CCl4. Studies of workers exposed to ECH or dry cleaning solvents suggest an increased risk of lung cancer, but the increase is not significant, possibly due to sample size. Studies of workers exposed to the other compounds have not given positive evidence of carcinogenicity. All studies have been characterized by insensitivity to increases in mortality because of small sample size. In some studies workers were exposed to more than one suspected carcinogen, making interpretation of results difficult. Estimation of qualitative risk to humans due to specific compounds should be based on experimental animal studies rather than on human epidemiological studies. (17 Refs)

41. OCCUPATIONAL CANCER.

Walker B

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J Environ Health; 44(4):176-179 1982

Occupational cancer issues are discussed including the incidence of work-related cancer, local and regional variations, effects of age, socioeconomic considerations, and risk assessment. Vigorous debate exists over the true proportion of cancers of occupational origin due to incomplete reporting systems and heterogeneity of occupational exposures. Viewing occupational cancers as a series of independent problems will focus attention on specific carcinogenic exposures. Local and regional variations are difficult to establish due to differences in terminology and in diagnostic and treatment services. Some trends, such as a higher incidence of lung and colon cancer in the Northeast and in urban areas of the Midwest, do exist. A latency period of 15-40 yr after exposure to environmental agents complicates the study of possible primary cancer determinants. The relationship of occupation to various socioeconomic factors makes it difficult to separate the effects on health of each of these factors. It is estimated that billions of dollars are spent on cancer treatment and lost earnings each yr. Recent emphasis on risk assessment has been qualitative identification of carcinogens and risk assessment of the dose-response relationship. Determination of the dividing line between 'significant' and 'insignificant' risk is especially difficult. Risk reduction should include cost benefit analysis. Possibilities for an absolute reduction in the risk of cancer are greater due to increased knowledge of scientific, societal, and technical factos. (12 Refs)

42. INCREASED INCIDENCE OF ANTIBODY IN PRE-MALIGNANT OCCUPATIONAL BLADDER CANCER.

Kumar S, Wilson PB, Costello CB

Christie Hosp. and Holt Radium Inst., Manchester M20 9BX, England

Oncology; 39(2):65-71 1982

Sera from 26.7% of the clinically healthy chemical workers with occupational exposure to bladder carcinogens produced immunofluorescent staining of the intracellular antigens of an allogeneic transitional cell carcinoma of the bladder. The incidence of positives among normal donor's and early stage bladder cancer patients was much lower, viz. 3.6 and 6.7%, respectively. The same sera were also tested for their staining reactions against surface antigens of bladder tumor cells. Again sera from a higher proportion of chemical workers (28.6%) was found to produce immunofluorescence compared with normal donors (12.6%) and bladder cancer patients (18.6%). The elevated incidence of antibodies among chemical workers' sera was not due to autoantibodies which were similarly distributed in the three groups. Furthermore, the staining of chemical workers' sera was not tumor type specific as all the sera which stained membrane or intracellular components were found to lose their staining ability on absorption with non-bladder tumor cells. It is proposed that these antibodies result from carcinogenic damage and have a physiological role to play. (Author abstract) (34 Refs)

OCCUPATIONAL FACTORS: GENERAL

43. THE RELATIONSHIP OF MALIGNANT MELANOMA, BASAL AND SQUAMOUS SKIN CANCERS TO INDOOR AND OUTDOOR WORK.

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Epidemiological Monitoring Unit, London Sch. Hygiene and Tropical Medicine, Keppel St., London WC1E 7HT, England

Br J Cancer; 44(6):886-891 1981

An analysis of occupational incidence data for malignant melanomas and squamous- and basal-cell carcinomas of the skin in England and Wales from 1970 to 1975 is reported. The occupational pattern for melanomas of the trunk and limbs differed markedly from the pattern for melanomas of the head, face and neck. Office work was associated with a large excess of melanomas of the trunk and limbs. In contrast, outdoor work was associated with an excess of melanomas of the head, face and neck and was also associated w ith an excess of squamous- and basal-cell carcinomas of the skin. This suggests that prolonged occupational exposure to sunlight is an important cause of squamous- and basal-cell carcinomas and of melanomas of the head, face and neck, but not of melanomas on other parts of the body. The high rate of lesions on the trunk and limbs in office workers may reflect their sunbathing or other recreational habits: but it contrasts clearly with other indoor work, where there is generally low rate of all forms of skin cancer. (Author abstract) (20 Refs)

44. THE ETIOLOGY, EPIDEMIOLOGY, AND PREVENTION OF LUNG CANCER.

Wynder EL
American Health Foundation, 320 East 43rd St., New York, NY, 10017
Semin Respir Med; 3(3):135-139 1982

The risk of lung cancer increases proportionally with the number of cigarettes smoked/day and the number of yr smoked. Smoking is the primary cause of lung cancer. Epidemiologic studies have suggested that risk of lung cancer decreases with reductions in the amount of tar in cigarettes smoked. Occupational exposure to asbestos, uranium, arsenic, coal products, bischloromethyl ether, vinyl chloride, nickel, chromium, iron oxide, and mustard gas is also associated with an increased risk of lung cancer. Some occupational exposures work synergistically with tobacco smoke. The higher rate of lung cancer in cities than rural areas can be explained by higher frequency of smoking, more occupational exposure to carcinogens, and higher reporting of lung cancer. The relationship between passive inhalation of cigarette smoke and lung cancer is unproven. Lung cancer can be prevented by preventing smoking in children, the cessation of smoking by adults, and by developing less harmful cigarettes. (15 Refs)

45. RISING LUNG CANCER DEATH RATES AMONG BLACK MEN: THE IMPORTANCE OF OCCUPATION AND SOCIAL CLASS.

Miller WJ, Cooper R
(c/o Cooper) Dept. Community Health and Preventive Medicine, Northwestern Univ. Med. Sch., 303 East Chicago Ave., Chicago, IL, 60611
J Natl Med Assoc; 74(3):253-258 1982

From 1950 to 1977 the age-adjusted cancer death rates for nonwhite men in the United States rose an astonishing 63.2%, while rates for white men increased 22.2% and fell slightly for women of both races. The bulk of this increase can be accounted for by cancer of the lung. As a serious health problem that is increasing in severity, cancer in black men deserves close attention and definitive action. This discussion focuses on basic epidemiological relationships in the origins of this epidemic, particularly in regard to the relative importance of occupation, cigarette smoking, and social class. (Author abstract) (24 Refs)

EPIDEMIOLOGICAL FINDINGS INVOLVING SPECIFIC AREAS

46. EPIDEMIOLOGICAL RISK FACTOR IN HODGKIN'S DISEASE.

Szelc S, Czech J, Kolosza Z
Oddzial 'A' Kliniki Radioterapii i Pracowni Epidemiologii Nowotworow, Oddizial Instytutu Onkologii, ul. Wybrzeze Armii Czerwonej 15, 44-100 Gliwice, Poland
Nowotwory; 31(2):169-174 1981

The possible risk factors of Hodgkin's disease (HD) were studied in 112 patients (53 men and 59 women) with HD and 101 control patients (48 men and 53 women) with solid tumors of various organs. The percentage of patients with HD from rural areas was 36.6%, that of the controls 21.8%, which may suggest that rural environment may play a role in the development of HD. No significant differences were found between the patients with HD and the controls in educational level and socioeconomic conditions. Considering the patients and controls who had been gainfully employed, 19.1% of the patients with HD and 21.8% of the control had been exposed to crude oil and mineral oils, 9.6% and 3.4%, respectively, to tar, asphalt and soot, and 6.4% and 4.6% to sawdust. No significant differences were found between the two groups in the incidences of tonsillectomy and appendectomy. Allergic and rheumatic diseases were nearly twice as frequent in the parents of the patients with HD than in those of the controls. (23 Refs) (In POL)

47. HEPATOCELLULAR CANCER IN SOUTHERN AFRICAN BLACKS: HBEAG, ANTI-HBE, IGM-ANTI-HBC AND OTHER MARKERS OF HEPATITIS B.

Kew MC, Desmyter J, De Groote G, Frosner G, Roggendorf M, Deinhardt F
(c/o Desmyter) Rega Inst., Catholic Univ. Leuven, Minderbroedersstraat 10, B-3000 Leuven, Belgium
Prog Med Virol; 27:41-48 1981

Using radioimmunoassay, frequency of HBeAg in 98 HBsAg-positive Southern African miners with hepatoma was similar to that in HBs-Ag-positive controls (13 vs 12%). Anti-HBe was slightly less prevalent in patients (60 vs 85%). Anti-HBs was much less prevalent, and anti-HBe and anti-HBc were more prevalent in 50 HBsAg-negative patients than in HBsAg-negative controls. HB markers were found in 88% of HBsAg-negative hepatoma cases and in 70% of HBsAg-negative controls; and in 96% of all hepatoma cases, vs 74% in the control population. All differences are significant. With a single exception, anti-HBe was found only in the presence of anti-HBc. IgM-anti-HBc was found much more frequently in HBsAg-positive patients than in the other groups. (Author abstract) (6 Refs)

48. CROSS-SECTIONAL AND LONGITUDINAL EPIDEMIOLOGY OF HEPATITIS B IN SENEGAL.

Barin F, Perrin J, Chotard J, Denis F, N'Doye R, Diop Mar I, Chiron JP, Coursaget P, Goudeau A, Maupas P
(c/o Maupas) Institut de Virologie, Facultes de Medecine et de Pharmacie, 2 bis, boulevard Tonelle, F-37000 Tours, France
Prog Med Virol; 27:148-162 1981

Prior to an immunization program, a field study of seric markers of hepatitis B (HBV) infection was undertaken in the Niakhar district of Senegal. Results of radioimmunoassay for H BsAg, anti-HBs, anti-HBc, and HBeAg-anti-HBe, and anti-hepatitis A virus and passive hemagglutination titer of HBsAg showed a high incidence of HBV; HBV increases sharply from 6 mo to 2 yr old, at which time it is found in 38% of the population. In endemic areas 80% of children 6-7 yr old exhibit at least one HBV seric marker indicating past or present infection acquired either during breast feeding or through contact with siblings, relatives, or other community members during the 2-7 yr old period. (6 Refs)

49. SYMPOSIUM ON TUMOURS IN THE TROPICS: HISTORICAL INTRODUCTION, BURKITT'S LYMPHOMA, NASOPHARYNGEAL CARCINOMA AND KAPOSI'S SARCOMA.

Hutt MS
Geographical Pathology Unit, Dept. Histopathology, St. Thomas' Hosp. Medical Sch., London SE1 7EH, England
Trans R Soc Trop Med Hyg; 75(6):761-765 1981

The geographic distribution of Burkitt's lymphoma (BL) in Africa and New Guinea can be explained by its association

with endemic malaria. Heavy Plasmodium falciparum infection in young children suppresses the immune system and enhances lymphocyte proliferation, which in turn may enhance susceptibility to the oncogenic effects of the Epstein-Barr virus (EBV). The age at the time of EBV infection and genetically determined immunologic deficits may also be involved. The sporadic BL of Western nations is usually not associated with EBV. EBV is also implicated in nasopharyngeal carcinoma (NPC). Most of the high-NPC areas are in the tropics of Africa and Asia. Genetic factors seem to be involved. In Malaysia, Singapore, and Hong Kong, the NPC frequency is high in Malays and ethnic Chinese, but low in Indians. Chinese patients with NPC have a previously unidentified second-locus HLA antigen (Sin-2). The NPC frequency is also high among Eskimos, Aleuts, and Alaskan Indians. In this population, the BW40 component of the HLA system is more frequent in NPC patients than in other groups. Kaposi's sarcoma (KS) is rare everywhere in the world except among the black populations of tropical Africa. Its geographic distribution does not seem to be related to ethnic origin, suggesting that environmental factors are the major etiologic determinant. Endogenous, perhaps hormonal factors might account for the male preponderance among KS patients. European and American cases of KS have been reported in immunosuppressed patients. An association of KS with elevated cytomegalovirus antibody titers has been reported in Western countries but not in Africa. (78 Refs)

50. EPIDEMIOLOGY OF PRIMARY HEPATOCELLULAR CARCINOMA IN SENEGAL.

Diop B, Denis F, Barin F, Perrin J, Chiron JP, Goudeau A, Coursaget P, Maupas P
Service de Medecine Interne, Faculte de Medecine et Pharmacie, Dakar-Fann, Senegal
Prog Med Virol; 27:35-40 1981

Primary hepatocellular carcinoma (PHC) appears to be a very common tumor in Sene gal. PHC is more often found in the age group 31-40 yr, with a mean age of 38 yr. Male cases of PHC predominate in liver-cell cancer in Dakar. PHC occurs predominantly in the Wolof ethnic group, which also account for most of th patients hospitalized in Dakar and the most prominent ethnic group in the Cap-Vert area. PHC exists in in Senegal in every socioeconomic group but is more prevalent among the poorer social classes. Increased numbers of PHC hospitalizations in Dakar occur in November, December, January, and February. In 90% of PHC cases there is an underlying hepatic cirrhosis or fibrosis. (18 Refs)

51. THE CHINESE EPIDEMIOLOGICAL APPROACH OF NASOPHARYNGEAL CARCINOMA RESEARCH AND CONTROL.

De-The G
CNRS, Faculty of Medicine A. Carrel, Rue Guillaume Paradin, F. 69372 Lyon CEDEX 2, France
Yale J Biol Med; 54(1):33-39 1981

Nasopharyngeal carcinoma (NPC), the major cancer killer in Cantonese Chinese, represents one of the three cancer research priorities in China. Apart from some fundamental research projects on the Epstein-Barr virus (EBV), their main efforts are epidemiologically and clinically oriented. Major surveys in GuangDong and GuangXi provinces showed that high EBV/IgA/VCA serum levels can detect NPC at an early stage of the disease. Characterization of 'precancerous lesions' in the nasopharynx and among the EBV/IgA positive individuals is in progress in the Zangwu county of the GuangXi Autonomous Region. Preventive anti-viral intervention in these individuals is being discussed. Search for genetic and environmental chemical carcinogens is also carried out. This Chinese epidemiological approach complements well the fundamental Western studies on EBV and NPC. (Author abstract) (21 Refs)

52. MORTALITY TRENDS FOR STOMACH CANCER IN ENGLAND AND WALES.

Davies JM
Div. Epidemiology, Inst. Cancer Res., Clifton Ave., Sutton, Surrey SM2 5PX, England
Br J Cancer; 44(6):879-885 1981

Despite a decline in mortality rates since about 1931 stomach cancer remains a major cause of death in England and Wales. National death rates from 1916 to 1979 are presented by sex, age and two broad social-class groups covering manual and non-manual occupations. In both sexes the decline in rates has been most rapid in the young and has slowed progressively with advancing age. The ratio of male/female rates is currently 1.3 at ages 25-34, increases to a peak of 2.7 at ages 55-64 and then declines again but the pattern was different before 1931. Among both men and married women, rates are consistently higher in manual than in non-manual classes, but the difference is greater among men. Rates for men in non-manual occupations, and for both classes of married women, declined markedly between 1931 and 1951, but for male manual workers the decline was relatively slight until after 1951. (Author abstract) (18 Refs)

53. VARIATIONS IN CANCER MORTALITY AMONG LOCAL AUTHORITY AREAS IN ENGLAND AND WALES: RELATIONS WITH ENVIRONMENTAL FACTORS AND SEARCH FOR CAUSES.

Gardner MJ, Winter PD, Acheson ED
Medical Res. Council's Environmental Epidemiology Unit, Univ. Southampton, Southampton General Hosp., Southampton SO9 4XY, England
Br Med J; 284(6318):784-787 1982

Geographical variations in specific causes of mortality among the 1366 local authority areas of England and Wales as defined at 1971 were studied by examining extracts from death certificates held on computer tape. Five items of information on each death (yr of death, age at death, sex, local authority area of residence, and the underlying cause of death, during the 11 yr 1968-78) permitted a more detailed investigation than had been possible before. Analysis of some early results of the study (including maps of mortality for pleural mesothelioma, nasal cancer, and bladder cancer) suggested that, despite the known limitations of death certification, systematic study of the mortality of small areas may give clues to etiological factors in the environment. Analyses relating mortality to the distribution of environmental factors and examining disease profiles of each area may also provide clues. These will be followed up by other methods of study, such as case-control techniques. (Author abstract) (20 Refs)

54. THE CAUSES OF PRIMARY HEPATOCELLULAR CARCINOMA IN GREECE.

Trichopoulos D
Dept. Hygiene and Epidemiology, Univ. Athens Medical Sch., Goudi, Athens 609, Greece
Prog Med Virol; 27:14-25 1981

Epidemiologic studies undertaken in Greece and concerning the etiology of PHC are reviewed, and the broader implica-

tions of their findings are discussed. HBV is the most important etiologic factor worldwide with an associated relative risk of about 15. Aflatoxin may be an important etiologic factor in Africa and Asia, mainly for PHC cases without indication of active HBV infection. In Europe and the USA a minority of PHC cases without indication of active HBV infection may be due to alcohol drinking, but there is now evidence that cigarette smoking is also related to this type of cancer with an associated relative risk of about 3. (Author abstract) (48 Refs)

55. SOME STATISTICAL DATA ON THE EPIDEMIOLOGY OF BRONCHOPULMONARY CARCINOMA IN THE TRIESTE REGION (1937-1977).

Zmajevich G, Crismancich F, Masci V, Stokelj R, Spacal B
II pneumoftizeoloski odjel, Specijalizirana pneumoloska bolnica 'S. Santorio', Trieste, Italy
Lijec Vjesn; 103(2/3):87-91 1981

Incidence of carcinoma of the bronchi (CB) and lungs (CL) in the Trieste region during the period from 1973-1977 is presented and discussed. Records from Trieste, Muggia, Duino-Aurisina, S. Dorglio, Sgonico, and Monrupino were used for obtaining the data. Sex of the patients with bronchopulm onary carcinoma (BPC), sex and age of BPC patients from the Trieste region in 1973 and 1977, incidence of BPC according to the european population and to age (34-65 yr old), and BPC mortality rate (MR) for different communities in the Trieste region, are presented. During 1973-1977, died from BPC 1,298 persons (1.062 males, 236 females), and male/female ratio was 7:1 according to the standardized european incidence. MR during a yr is constant for both sexes, and is max for the group of 65-57 yr old. MR is max for patients 75 and 79 yr old, according to the specific incidence. The most frequent form of BPC observed in females is adenocarcinoma, and the epidermoid form dominates in males. Most of the patients (81.2%) smoked more than 10 cigarettes/day, while only 6,5% of the patients were non-smokers. CB and CL was more frequent in the industrial parts of the region (74.3/10,000), in contrast to the agricultural zones (35.0/10,000). (11 Refs) (In SCR)

56. EPIDEMIOLOGICAL STUDY OF HYPOPHARYNGEAL CANCER IN JAPAN FROM STATISTICAL STUDIES OF 1978 AND 1979.

Miyahara H, Sato T
Dept. Head and Neck Surgery, Center for Adult Diseases, Osaka 537, Japan
Nippon Jibiinkoka Gakkai Kaiho; 84(11):1460-1467 1981

Based on Japanese national cancer statistics (1973-78) and registries (1967-76), a nation-wide survey on hypopharyngeal cancer (1978-1979), and data from 131 hospitals, incidence of and mortality due to hypopharyngeal cancer in Japan were studied. The age-adjusted mortality rate (per 100,000 population) from 1973-1977 was 0.19 for males and 0.07 for females. During the period of 1978-1979, 632 new cases of hypopharyngeal cancer (444 men, 188 women) were reported and were found to show age-adjusted incidence rates 0.37 for males and of 0.13 for females. Hypopharyngeal cancer occurred most often in patients 65-69 yr old. In some prefectures during the period 1978-1979, mortality rates for males were remarkably different from those for females. (9 Refs) (In JPN)

57. EPIDEMIOLOGICAL PROSPECTS OF CANCER OF THE LARGE INTESTINE.

Tajima K, Tominaga S
Dept. Epidemiology, Aichi Prefectural Cancer Center, Aichi, Japan
Kango Gijutsu; 27(15):6-11 1981

Although all countries show cancer mortality rates of about 20%, differences in rates are observed which depend on site and dietary habits. Gastric cancer mortality rates are high for both Japanese men and Japanese women, but while mortality rates associated with gastric, uterine, and hepatic cancer are markedly decreasing in the women, those associated with hepatic and lung cancer are increasing in the men. Mortality rates for colon and rectal cancer also have increased markedly in the Japanese. Analysis of international statistics indicates that, for either men or women, mortality rates associated with gastric cancer are inversely related to those associated with cancer of the colon; furthermore, slight increases in mortality rates associated with colon cancer were correlated with large decreases in mortality rates associated with rectal cancer. In Japan, all age groups show increases in mortality rates associated with colon cancer, whereas only the greater than 70-yr-old groups show increases in mortality rates associated with rectal cancer. From 1962-1978, the greatest increases in rates of mortality associated with colon cancer have been observed for cancer of the sigmoid flexure. Further study of the effects of changes in Japanese dietary patterns on the decreasing mortality rates associated with gastric cancer and on the increasing mortality rates associated with colon cancer was thought to be necessary. (12 Refs) (In JPN)

58. ENDOMETRIAL CARCINOMA IN MIYAGI PREFECTURE, JAPAN: HISTOPATHOLOGIC ANALYSIS OF A CANCER REGISTRY-BASED SERIES AND COMPARISON WITH CASES IN AMERICAN WOMEN.

Silverberg SG, Sasano N, Yajima A
Dept Pathology, Univ. Colorado Sch. Medicine, Denver, CO, 80262
Cancer; 49(7):1504-1510 1982

Cases of endometrial carcinoma (104) from the Cancer Registry of Miyagi Prefecture, Japan, during the period from 1966-1977 have been reviewed histologically. The most impressive differences between tumors in this low-risk population and those reported in American women are higher frequencies of the mixed adenosquamous histology, myometrial vascular invasion, and lymphoid infiltration within and around the tumors in the Japanese cases. The possible significance of these observations, both clinical and epidemiologic, is discussed in detail. (Author abstract) (35 Refs)

59. THE SITUATION OF CANCER IN ROMANIA.

Trestioreanu A, Coban A, Ursuleanu N, Georgescu M
Institutul oncologic, Bucharest, Romania
Rev Chir [Oncol]; 20(1):61-76 1981

In Romania, approx 24,000-28,000 deaths from cancer are registered annually. In 1978, malignant tumors were the second most frequent cause of death. In rural areas, a slight decrease has been observed and in urban areas annual oscillations in death rates from cancer have been noted. Mortality from cancer peaks in the 70-74 yr age group of males and in the 75-79 yr age group of females. For most cancer sites max mortality rates were observed in the west and center of Romania. (no Refs) (In RUM)

60. PRIMARY DISABILITY FROM MALIGNANT TUMORS IN FACTORY AND OFFICE WORKERS OF THE BYELORUSSIAN SSR.

Skoblia ES, Gul'tsov OV, Sachko NV, Priatkina OP
Byelorussian Res. Inst. Expertise and Rehabilitation of Disabled, Minsk, USSR
Vopr Onkol; 27(12):33-36 1981

The report deals with an evaluation of the data on primary disability caused by malignant tumors in factory and office workers of the Republic within 20 yr (1960-1979). The number of the d isabled doubled in that period. However, the intensive indices of primary disability had remained practically unchanged until 1975 and showed a slight increase within the last yr only. It is noteworthy that the percentage of Group I-II invalids in the overall structure of primary disability from malignant tumors is very high (95%). (Author abstract) (7 Refs) (In RUS)

61. CANCER MORTALITY IN BARCELONA 1960-1978.

Bosch FX, Oria J, Garcia A, Juvanet J, Camprodon A, Pumarola A
Oncology Service, Hosp. de Sant Pau, Avda S Antonio M Claret, 167, Barcelona 25, Spain
Int J Epidemiol; 11(1):46-48 1982

Cancer mortality rates specific for sex and site for the 1960-1978 period are presented. The population covered is the municipal area of Barcelona. Rates have been adjusted taking as the standard population the Spanish census of 1970. Leading sites for males are lung, stomach and large intestine. Breast, large intestine and stomach are leading causes of death for females. Secular trends follow the general picture of the western industrial countries. (Author abstract) (3 Refs)

62. A COHORT ANALYSIS OF U.S. STOMACH CANCER MORTALITY 1950-1977.

Manton KG, Stallard E
Center for Demographic Studies, Duke Univ., Box 4732, Duke Station, Durham, NC, 27706
Int J Epidemiol; 11(1):49-61 1982

Models of human carcinogenesis, such as the multi-stage model of Armitage and Doll, are designed to explain the age increase in the incidence of cancers in individuals. As a consequence, analyses of population level age-specific death rates via such models are appropriately applied to cohort data where such data are available. In this study a multi-stage model is applied to cohort data for stomach cancer death rates in the United States population for nine distinct cohorts observed over a recent 28-yr period (1950-1977). The multi-stage model parameters obtained from analyses of cross-sectional mortality data under the assumption of no cohort differences in age-specific stomach cancer death rates. (Author abstract) (14 Refs)

63. CANCER INCIDENCE AND MORTALITY IN THE UNITED STATES, 1973-77.

Young JL, Percy CL, Asire AJ, Berg JW, Cusano MM, Gloeckler LA, Horm JW, Lourie WI, Pollack ES, Shambaugh EM
(c/o Berg) Dept. Pathology, Univ. Colorado Medical Sch., Denver, CO, 80262
Natl Cancer Inst Monogr; 57:1-187 1981

Data on cancer incidence and mortality in the United States between 1973 and 1977 are presented. Data are classified according to sex, race, age, and residence of the patients, anatomic site, and histologic type of cancer. For all areas, excluding Puerto Rico, the av annual age-adjusted incidence rates for all malignant neoplasms and for carcinoma in situ were 331.5 and 26.7 per 100,000, respectively. The most common primary sites of cancer were colon/rectum, breast, and lung, with age-adjusted incidence rates of 48.5%, 46.7%, and 46.7%, respectively. The three sites accounted for 42.7% of all malignant cancers. Seventy-eight percent of in situ lesions occurred in the female genital system. Av annual mortality due to malignant neoplasms for the total United States was 166.5. Of all cancer deaths, lung cancers accounted for 21.7%, colorectal 13.6%, and breast 9.2%. Considerable variation was noted in both incidence and mortality from cancer among various racial and ethnic groups. Generally males had higher cancer rates than females. Striking differences occured among the race-sex groups and geographic areas with respect to incidence of cancer by sites. An incidence-to-mortality ratio of 1.97 was obtained. Data is classified according to 304 specific anatomic sites. Distribution of the 8,968 non-Hodgkin's lymphomas is described in terms of anatomic site (24% were extra-nodal) and race. Of all malignant cancers, 51% were diagnosed in patients aged 65 yr and older. The median age for diagnosis of patients with malignant lesions was 65.4 yr compared with 37.1 yr for in situ lesions. Of all neoplasms, 34.7% were classified adenocarcinomas, 12.4% as squamous cell carcinomas, and 9.4% as duct adenocarcinomas. A comparison with previous data is presented. (14 Refs)

64. CANCER INCIDENCE AND MORTALITY IN METROPOLITAN DETROIT, 1973-77.

Swanson GM, Brennan MJ
Dept. Social Oncology, Michigan Cancer Foundation, 110 East Warren Ave., Detroit, MI, 48201
Natl Cancer Inst Monogr; 57:219-297 1981

Data on cancer incidence and mortality in metropolitan Detroit (1973-1977) are presented. Differences between data from Detroit and those obtained by the Surveillance, Epidemiology, and End Results (SEER) Program are described. Less disparity between blacks and whites occurs in incidence rates in Detroit than is seen for the total SEER population. The increase in mortality rates was greater for Detroit blacks than for blacks in all SEER areas. Cancer sites for which Detroit appears to differ considerably from the total SEER program include lung and bronchus, colon, female breast, and prostate gland. (no Refs)

65. CANCER INCIDENCE AND MORTALITY IN IOWA, 1973-77.

Isacson P, Latourette H
Dept. Preventive Medicine and Environmental Health, Univ. Iowa Coll. Medicine, Iowa City, IA, 52242
Natl Cancer Inst Monogr; 57:299-329 1981

Data on cancer incidence and mortality in Iowa (1977-79) is presented, including av annual age-adjusted incidence and mortality rates by primary site and sex for all races and whites; number of malignant and in situ cases diagnosed by primary site, age group, and median age, for whites, both sexes, males, and white females; av annual crude, age-specific, and cumulative incidence rates for malignant and in situ cases by primary site, for whites, both sexes, males, and females; number of cancer death s by primary site, age group, and median age, for whites, both sexes, males, and females; and av annual crude, age-specific, and cumulative mortality rates by primary site, for whites, both sexes, males, and females. Population characteristics, present registry organization, and use of registry data for epidemiological research are described. (no Refs)

66. CANCER INCIDENCE AND MORTALITY IN METROPOLITAN ATLANTA, 1975-77.

Child MA
Emory Univ., Gatewood House, Atlanta, GA, 30322
Natl Cancer Inst Monogr; 57:531-407 1981

Data on cancer incidence and mortality in metropolitan Atlanta (1975-77) are presented: av annual age-adjusted incidence and mortality rates by primary site, race, and sex; number of malignant and in situ cases diagnosed by primary site, age group, and median age, all races, for both sexes, for males, and for females; av annual crude, age-specific, and cumulative incidence rates for malignant and in situ cases by primary site, all races, for both sexes, for males, and for females; number of cancer deaths by primary site, age group, and median age, all races, for both sexes, for males, and for females; and av annual crude, age-specific, and cumulative mortality rates by primary site, all races, for both sexes, for males, and for females. Data are also presented in terms of the variable of race. Differences between national and Atlanta findings are discussed. (no Refs)

67. CANCER INCIDENCE AND MORTALITY IN METROPOLITAN NEW ORLEANS, 1974-77.

Halperin ST, Weilbaecher RG, Correa P, Krementz ET
Louisiana Tumor Registry, 2-3-4 Loyola Building, Suite 1000, New Orleans, LA, 70112
Natl Cancer Inst Monogr; 57:409-487 1981

Cancer incidence and mortality in metropolitan New Orleans (1974-77) is discussed in terms of primary site, race, sex, and age. Both malignant tumors and in situ lesions are considered. New Orleans data show an overall high cancer incidence in blacks, mainly due to excessive rates for cancer of the lung, buccal cavity, esophagus, stomach, cervix, and prostate gland. For some cancers, including breast, ovary, bladder, and kidney cancers and the lymphoma-leukemia group, whites have a moderately excessive rate compared with blacks. Differences between New Orleans data and those obtained by the Surveillance, Epidemiology, and End Results Program are described. Particularly marked is the excess of respiratory cancer in New Orleans. (no Refs)

68. CANCER INCIDENCE AND MORTALITY IN NEW MEXICO, 1973-77.

Key CR
New Mexico Tumor Registry, 900 Camino de Salud NE, Albuquerque, NM, 87131
Natl Cancer Inst Monogr; 57:489-595 1981

Data on cancer incidence and mortality in New Mexico (1973-77) by primary site, sex, race, and age are presented. Data for Hispanics, Anglos, and Indians are compared. For all cancers and for the most common cancers, the Anglo population had incidence rates similar to those for whites in the Surveillance, Epidemiology, and End Results Program. Overall rates for Hispanic males and females were considerably lower than those for all whites. However, for some specific cancers, such as gallbladder, stomach, and cervix, the rates were much higher than for comparison populations. Although New Mexico's American Indians have low total cancer incidence rates, the rates for cancer of the gallbladder, stomach, and uterine cervix were even higher than among Hispanics. (no Refs)

69. CANCER INCIDENCE AND MORTALITY IN UTAH, 1973-77.

Lyon JL
Utah Cancer Registry, 540 Arapeen Drive, Room 204, Salt Lake City, UT, 84143
Natl Cancer Inst Monogr; 57:597-627 1981

Data on cancer incidence and mortality in Utah (1973-77) by age, sex, race, and primary site are presented. Both carcinomas and in situ lesions are considered. Utah has the lowest overall incidence of cancer for any of the Surveillance, Epidemiology, and End Results Program registries. The lower-than-expected incidence of cancer is attributed almost exclusively to the portion of the Utah population which is Mormon. Deficits noted for various cancer sites are heavily concentrated in those sites of the body associated with tobacco and/or alcohol use including the tongue, oral cavity, pharynx, larynx, esophagus, and urinary bladder. (no Refs)

70. CANCER INCIDENCE AND MORTALITY IN SEATTLE-PUGET SOUND, 1974-77.

Thomas DB, Thompson DJ
Program in Epidemiology and Biostatistics, Fred Hutchinson Cancer Res. Center, 1124 Columbia St., Seattle, WA, 98104
Natl Cancer Inst Monogr; 57:629-659 1981

Data on cancer incidence and mortality in the Seattle-Puget Sound (SPS) area (1974-77) are presented by primary site, age, and sex. Malignant and in situ cases are considered. Rates for whites in SPS differed appreciably from comparable rates for all Surveillance, Epidemiology, and End Results (SEER) Program areas combined for a few sites; rates of lung cancer in SPS women and prostate cancer in SPS males were excessive. Incidence rates of uterine cancer were higher in the SPS region than in all SEER areas. Despite high cloud cover in the SPS area, neither incidence nor mortality rate for melanoma differed appreciably from those for SEER areas combined. (no Refs)

71. CANCER INCIDENCE AND MORTALITY IN SAN FRANCISCO-OAKLAND SMSA, 1973-77.

Austin DF
Dept. Health Services, Resource for Cancer Epidemiology, 1450 Broadway, Oakland, CA, 94612
Natl Cancer Inst Monogr; 57:661-789 1981

Data on cancer incidence and mortality in the San Francisco-Oakland Standard Metropolitan Statistical Area (SMSA) between 1973 and 1977 are presented by primary site, race, sex, and age. Both malignant and in situ cases are considered. (no Refs)

72. CANCER INCIDENCE AND MORTALITY IN HAWAII, 1973-77.

Kolonel LN
Epidemiology Program, Cancer Center Hawaii, 1236 Lauhala St., Honolulu, Hawaii, 96813
Natl Cancer Inst Monogr; 57:791-943 1981

Data on cancer incidence and mortality in Hawaii (1973-77) are presented by primary site, sex, and ethnic group (Caucasian, Hawaiian, Japanese, Chinese, Filipino). Wide variation among ethnic groups was observed. (4 Refs)

73. CANCER INCIDENCE AND MORTALITY IN PUERTO RICO, 1973-77.

Martinez I
Dept. Health, Cancer Control Program, Box 9342, Santurce, Puerto Rico, 00908
Natl Cancer Inst Monogr; 57:947-977 1981

Data on cancer incidence and mortality in Puerto Rico (1973-77) are presented by primary site and sex. Both malignant and in situ lesions are considered. Puerto Rico had a higher incidence of cancer of the mouth, hypopharynx, esophagus, stomach, and penis in comparison with findings for all Surveillance, Epidemiology, and End Results (SEER) Program areas. The incidence for all SEER areas, excluding Puerto Rico, was higher for cancers of the lip, colon, rectum, retroperitoneum, lung, bronchus, pleura, melanoma of skin, breast, corpus uteri, ovary, testis, urinary bladder, kidney, brain, endocrine glands, and lymphomas and leukemias. (no Refs)

OTHER EPIDEMIOLOGICAL FINDINGS

74. OCCUPATIONS OF FATHERS OF CHILDREN DYING FROM NEOPLASMS.

Sanders BM, White GC, Draper GJ
(c/o Draper) Childhood Cancer Res. Group, Univ. Oxford, Radcliffe Infirmary, Oxford OX2 6HE, England
J Epidemiol Community Health; 35(4):245-250 1981

Occupations of fathers of 4,395 children less than 15 yr old dying of neoplasms during 1959-1963 and 1970-1972 were studied. There was a positive association (p less than 0.001) for both periods for administrators, managers, professionals, artists, and technical workers, even after correlation for social-class-related causes of death. An insignificant, but apparent, association of kidney tumors and hydrocarbon-related occupations agreed with a similar finding in the United States. No other association of neoplasms with hydrocarbon-related occupations was observed. (18 Refs)

75. PSORIASIS AND THE RISK OF CANCER.

Stern R, Zierler S, Parrish JA
Dept. Dermatology, Beth Israel Hosp., 330 Brookline Ave., Boston, MA, 02215
J Invest Dermatol; 78(2):147-149 1982

To test the validity of the common hypothesis that patients with psoriasis have an inherently lower susceptibility to cancer, we prospectively studied 1,367 patients with severe psoriasis who enrolled in a clinical trial of oral methoxsalen photochemotherapy for treatment of psoriasis for an av of 3.2 yr. The incidence of non-cutaneous cancers and the number of deaths from such cancers were slightly but not significantly higher than that expected for the general population (relative ris k = 1.1; standard mortality ratio = 1.3). Among 318 patients (23%) in this cohort who were over 35 yr of age and who lacked appreciable exposure to suspected cutaneous carcinogens, the observed incidence for cutaneous carcinoma was 1.4 times that expected, based on rates for the general population (90% confidence interval = 0.8 to 2.7). These data suggest that patients with psoriasis have a risk of systemic and cutaneous cancer that is comparable to the risk for the general population. (Author abstract) (17 Refs)

76. EPIDEMIOLOGICAL STUDIES OF THE ROLE OF EXOGENOUS ESTROGENS IN THE ETIOLOGY OF BREAST CANCER.

Kelsey JL, Bulbrook RD, Korenman SG, Silteri PK, Henderson BE
Dept. Epidemiology and Public Health, Yale Univ. Sch. Medicine, New Haven, CT, 06510
Banbury Rep; 8:215-228 1981

Epidemiological studies of the relationship between use of oral contraceptives (OC) and estrogen replacement therapy to the development of breast cancer are reviewed. No major study of OC has demonstrated a positive or negative overall association. With at least a 15-yr latent period, current studies will better evaluate the association between OC and breast cancer. Studies on estrogen replacement have provided conflicting results; no firm conclusion has been made. (48 Refs)

77. A PROSPECTIVE STUDY OF THE RELATION BETWEEN THYROID FUNCTION AND SUBSEQUENT BREAST CANCER.

Bulbrook RD, Thomas BS, Fantl VE, Hayward JL, Lippman M, Siliteri PK, Korenman SG
Dept. Clinical Endocrinology, Imperial Cancer Res. Fund, London WC2A 3PX, England
Banbury Rep; 8:131-141 1981

Prospective studies of 5,000 normal women were conducted to investigate the relationship between thyroid function and the development of breast cancer. Up to the age of 45 yr, thyroid dysfunction was not correlated to increased risk by women with a positive family history of breast cancer and was of no etiologic significance in the precancer group. In peri- and postmenopausal women with hypothyroidism, the thyroid gland appears to be involved in the development of breast cancer. (18 Refs)

78. THE EPIDEMIOLOGY OF BREAST CANCER AS IT RELATES TO MENARCHE, PREGNANCY, AND MENOPAUSE.

Pike MC, Henderson BE, Casagrande JT, Segaloff, Petrakis
Dept. Family and Preventive Medicine, Univ. Southern California Sch. Medicine, Los Angeles, CA, 90033
Banbury Rep; 8:3-19 1981

Epidemiology of breast cancer (BC) was reviewed in Japan. The following factors were included international variation, secular trends, key risk factors, relationship between age and the incidence of epithelial tumors, the age incidence of BC, predictive relative risks for menarche, first full-term pregnancy (FFTP) and menopause, and predicted BC incidence. An early menarche, late age at FFTP, and late age at menopause all increase the risk of BC. The factors were brought together into a mathematical m odel assuming different rates of metabolism. Observed relative risks associated with different ages at menopause were overestimated. It was concluded that a more involved estimation parameter is needed. (31 Refs)

79. EPIDEMIOLOGY OF BREAST CANCER: CLINICAL FINDINGS IN 47 CASES.

Galletto L, Bricchi G, Rattazzi PD, Viglietta M, Vucusa C
Divisione di Obstetricia e Ginecologia, Ospedale Maggiore 'SS. Annunziata', Savigliano (Cuneo), Italy
Minerva Ginecol; 33(12):1109-1112 1981

A group of 47 mammary carcinoma (MC) patients (35-80 yr old; 18 before menarche, 29 after) was compared with a control group (CG: patients of a prevention center) with respect

to age, age of first pregnancy, number of children, breast feeding, time span between menarche and menopause, and blood group. Based on metastasis to lymph nodes and on International Federation of Gynecology and Obstetrics (TNM-FIGO) staging, 18 of the MC patients were Stage T1, 19 were Stage T2, 7 were Stage T3, 1 were Stage T4, and the remaining 2 were not classified. Histologically, 15 of the patients had infiltrating ductal MC, 23 had solid MC, 2 had infiltrating lobular MC, 1 had undifferentiated MC, 1 had phyllode adenocarcinoma, 1 had comedo MC, and 1 had ductal MC in situ. The av number of children was 1.55 for the MC patients and 2.25 for the CG. The av age of first pregnancy was 28 yr for the MC patients and 24 yr for the CG. The breast feeding was practiced by 69% of the MC patients and by 86% of the CG. The time between menarche and menopause was 34.5 yr for the MC patients and 34.6 yr for the CG. The frequencies of blood groups 0, A, and B in the general population of the area were 37%, 59% and 3%, respectively; 44%, 54%, and 2%. These data were compared with those published by other investigations. Possible risk factors were discussed. (8 Refs) (In ITA)

80. BILATERAL CARCINOMA OF THE BREAST: EPIDEMIOLOGY AND HISTOPATHOLOGY.

Adami HO, Hansen J, Jung B, Lindgren A, Rimsten A
(c/o Hansen) Dept. Oncology, Univ. Hosp., S-750 14 Uppsala, Sweden
Acta Radiol Oncol Radiat Phys Biol; 20(5):305-309 1981

A history of previou carcinoma in the contralateral breast was found in 66 of 1,351 women (5%) consecutively diagnosed as having breast carcinoma. The mean time interval between the diagnosis of the first and second tumor was 10.0 yr (range 0-37 yr); 63 of the tumors were metachronous. No significant differences were found between the first and the second carcinoma with respect to the Ackerman malignancy grading or the frequency of axillary node involvement. High risk groups for bilateral disease could not be defined on the basis of information about familial occurrence, parity, age at first birth, or malignancy grade. (Author abstract) (26 Refs)

81. EPIDEMIOLOGIC STUDIES OF MUTAGENICITY OF BREAST FLUIDS - RELEVANCE TO BREAST CAN CER RISK.

Petrakis NL, Pike MC, Korenman SG
Dept. Epidemiology and International Health, Univ. California, San Francisco, CA, 94143
Banbury Rep; 8:243-255 1981

Secretion and accumulation of certain chemical substances by the breast might result in initiation and promotion of benign and malignant breast disease. Breast fluid collected from 456 women was tested for mutagenic activity with the Ames Salmonella mutagenicity test. Putative mutagenic substances were present in the breast fluids of 6.7% of the women. High concentrations of hormones have been found in breast aspirates which could act as promoting factors. Preliminary data on cerumen type and cytologic dysplasia suggested that a genetic factor affecting breast secretion may indirectly influence exposure of breast epithelia to carcinogens. (32 Refs)

82. RISK FACTORS FOR CERVICAL CANCER.

Hulka BS
Dept. Epidemiology, Rosenau Hall 201H, Univ. North Carolina, Chapel Hill, North Carolina, NC, 27514
J Chronic Dis; 35(1):3-11 1982

Despite a long history of research into the epidemiology and biology of cervical carcinoma, a definitive statement about its probable causes still remains elusive. This review recognizes the population based data on high and low risk groups and summarizes the findings from numerous case-control studies which are associated with cervical cancer. Although vigorously pursued, an increased risk from oral contraceptives has not been convincingly demonstrated. A variety of venereally transmitted organisms appear to be frequent cohabitants with cervical neoplastic cells. Herpesvirus type 2 still remains the prime suspect in the complex pathogenesis of cervical neoplasia. Clinical findings, biological characteristics of the virus, serological studies and interactions of host cells and viral particles continue to stimulate the most intensive investigative efforts. (Author abstract) (69 Refs)

83. FAMILIAL MULTIPLE MYELOMA. A REVIEW OF THIRTY-SEVEN FAMILIES.

Shoenfeld Y, Shaklai M, Berliner S, Gallant LA, Pinkhas J
Dept. Medicine 'D', Tel Aviv Univ. Sackler Sch. Medicine, Beilinson Medical Center, 49100 Petah Tiqva, Israel
Postgrad Med J; 58(675):12-16 1982

The review of the pertinent literature disclosed 36 reports of familial multiple myeloma, described mostly in siblings, to which the authors add one more family. These patients did not differ significantly form those with non-familial myeloma with regard to sex, age, distribution of monoclonal proteins, clinical and laboratory data, and the course and prognosis of the disease. An increased incidence of immunoglobulin abnormalities was observed in healthy relatives of patients affected with familial myeloma. In most cases the time interval of the diagnosis of myeloma in a family member of a known patient was under 4 yr. These observations, in conjunction with reports of myeloma occurring in clusters in a community and the appearance of myeloma in spouses raise the possibility of an environmental factor (virus?) which may contribute to the pathogenesis of myeloma in genetically predisposed individuals. Multiple myeloma should be added to the list of neoplastic diseases in which the family history is relevant and in which genetic and possibly environmental factors may be pathogenetically involved. (Author abstract) (49 Refs)

84. HYPOTHESIS: THE ENVIRONMENT IS A MAJOR DETERMINANT OF THE IMMUNOLOGICAL SUB-TYPE OF LYMPHOMA AND ACUTE LYMPHOBLASTIC LEUKAEMIA IN CHILDREN.

Ramot B, Magrath I
Dept. Haematology, Chaim Sheba Medical Centre, Tel Aviv Univ. Medical Sch., Tel Aviv, Israel
Br J Haematol; 50(2):183-189 1982

Based on a study of socioeconomic status, the ratio of leukemia to lymphoma, occurrence of their subtypes, acute lymphoblastic leukemia (ALL) in American blacks, and the early age-peak of ALL, a hypothesis is presented that the pattern of lymphoid malignancy in children is dependent on environment and particularly on socioeconomic circumstances. In the most economically underprivileged, ie in equatorial Africans, B-cell lymphomas predominate, leukemia is rare, and ALL may be entirely of the T-cell type. In populations of intermediate economic status, ie in American blacks and Israeli Arabs, B-cell lymphomas are infrequent and the spectrum of lymphoma varies according to the particular local mosaic of environmental and/or genetic factors. In the highest, socially privileged class, ie American whites and Europeans, ALL has a high incidence and is the most common malignant disease in children. (33 Refs)

85. THE INCIDENCE OF MALE GENITAL TUMORS: A CELLULAR MODEL FOR THE AGE DEPENDENCE.

Dix D, Breton D, Cohen P
Dept. Biology and Health Science, Univ. Hartford, West Hartford, CT
Yale J Biol Med; 54(4):293-298 1981

Most human tumors, including most male genital tumors, exhibit an exponential increase in incidence with advancing age of the host. This exponential age-incidence pattern can be explained by the accumulation of mutations in the stem cells of the tissues of tumor origin. The age-incidence pattern for testicular tumors, however, is unique with a large linear increase in incidence from age 14 to 30 and a linear decline in incidence from age 30 to 60. After age 60, the incidence of testicular tumors remains low and constant. The probability of testicular tumorigenesis is determined by the susceptibility of male germ cells to neoplastic mutation and/or the neoplastic mutagenicity of the male germ cell environment. Since there is no evidence for an environmental mutagen which is specific for male germ cells, and since male germ cells are unusually susceptible to mutation, we interpret the variation in testicular tumor incidenc e with age as a reflection of the susceptibility of male germ cells to neoplastic mutation. Cells are most susceptible to mutation during genome replication and we propose a model for testicular tumorigenesis which is consistent with the available data on male germ cell proliferation and with the data on testicular tumor incidence. (Author abstract) (33 Refs)

86. ARSENIC-RELATED HEPATIC ANGIOSARCOMA.

Falk H, Caldwell GG, Ishak KG, Thomas LB, Popper H
Chronic Diseases Div., Centers Disease Control, 1600 Clifton Road, NE, Atlanta, GA, 30333
Am J Industr Med; 2(1):43-50 1981

This epidemiological study (highlights only) was conducted to provide additional evidence for arsenic being one cause of hepatic angiosarcoma (HAS). Pathological samples from 350 cases originally diagnosed as HAS in the United States, mostly during 1964-1974, were reexamined. Epidemiological followups (published separately) were made on the 168 confirmed cases involving deaths during 1964-1974. Six cases were attributed to arsenic exposure, five adults from therapy for asthma or psoriasis involving imbibing Fowler's medicine (potassium arsenite), and one child with environmental exposure. Of the five therapy cases (four males and one female, 41-58 yr old), length of therapy and latency period were known only for the males, 10-17 yr and 12-24 yr, respectively. Idiopathic HAS tended to appear much later in life, in the 70s. Four male farmers known to have used Paris green or other unspecified arsenicals for long periods were 68-79 yr old at death from HAS. Two other confirmed cases with deaths prior to 1964 also involved males aged 42 and 50 yr with histories of 6 and less than 15 yr, respectively. The results were taken as supportive of a 1957 report involving autopsies on German vineyards, some dying from HAS and all having both used arsenical insecticides and regularly imbibed a beverage made from the grape skins. (27 Refs)

VIRAL FACTORS INVOLVING ENVIRONMENTAL AND OCCUPATIONAL EXPOSURE

87. COMPLEMENT-FIXING ANTIBODY TO EPSTEIN-BARR VIRUS SOLUBLE ANTIGEN IN POPULATIONS AT HIGH AND LOW RISK FOR NASOPHARYNGEAL CARCINOMA.

Levine PH, Ebbesen P, Connelly RR, Das S, Middleton M, Mestre M
NCI, Landow Bldg., II-12, Bethesda, MD, 20205
Int J Cancer; 29(3):265-268 1982

Greenland Eskimos comprise an ethnic group with one of the highest recorded incidence rates for nasopharyngeal carcinoma in the world. Sera from 625 Eskimos and 73 Danes (Caucasians) living in Greenland, as well as from 62 Danes living in Denmark, were tested for complement-fixing antibody to Epstein-Barr virus (EBV) soluble antigen and, from this study group, 129 donors were matched by age and sex for a study comparing antibody to viral capsid antigen, early antigen, and soluble antigen. Both Eskimos and Danes living in Greenland had significantly higher titers of EBV antibodies than Danes living in Denmark, suggesting that environment was more important than genetics or socioeconomic factors in determining the antibody response to EBV. Age and sex were also factors, higher titers occurring in females and young Eskimos. (Author abstract) (21 Refs)

88. HEPATITIS B INFECTION AND PRIMARY LIVER CANCER.

Maupas P, Melnick JL
Institut de Virologie, Facultes de Medecine et de Pharmacie, 2 bis, boulevard Tonnelle, F-37000 Tours, France
Prog Med Virol; 27:1-5 1981

The statistical relationship between hepatitis B infection and primary liver cancer (PHC) is clear. Evidence from a recent workshop in Dakar, Senegal, is presented, including geographic distribution, endemiology, cirrhosis, DNA and antigen, and animal viral evidence. Hepatitis B vaccines and antibody induction treatment may contribute to a reduction in PHC, even though the precise etiologic relationship between the two diseases remains unknown. (no Refs)

89. A COMPARISON OF THE PATHOBIOLOGY AND EPIDEMIOLOGY OF CANCERS ASSOCIATED WITH VIRUSES IN HUMANS AND ANIMALS.

Essex M, Gutensohn N
Dept. Microbiology, Harvard Univ. Sch. Public Health, 665 Huntington Ave., Boston, MA, 02115
Prog Med Virol; 27:114-126 1981

Several oncogenic viruses in animals (chicken, cat, ox, gibbon, rabbit) are discussed in terms of characteristics and epidemiological features and are compared with human malignancies most likely to be caused by a virus (leukemias, Hodgkin's disease, Burkitt's lymphoma, cervical cancer, nasopharyngeal cancer, and primary hepatocellular carcinoma). Cancers of industrialized countries tend to be associated with environmental or dietary agents, whereas those in the developing world are likely to be of viral origin, suggesting that a vaccination program would have a profound effect in developing countries. (52 Refs)

POTENTIAL CARCINOGENIC FACTORS RELATED TO MEDICAL TREATMENT

90. THE RISK OF SECOND PRIMARIES SUBSEQUENT TO IRRADIATION FOR CERVIX CANCER.

Lee JY, Perez CA, Ettinger N, Fineberg BB

(c/o Perez) Div. Radiation Oncology, Mallinckrodt Inst. Radiology, Washington Univ. Sch. Medicine, 4511 Forest Park, St. Louis, MO, 63108

Int J Radiat Oncol Biol Phys; 8(2):207-211 1982

The risk of developing a new primary malignancy following radiation therapy (RT), alone or combined with surgery, for invasive cancer of the uterine cervix was studied in 1,048 patients with histologically proven invasive carcinoma Stages I, II, or III, who were followed up with a median period of 4 yr. During the observation time 32 second primaries (SP) were reported. No statistically significant difference between the observed and expected number of SP was noted. Using the person yr approach, the SP incidence rate was 5.49/1,000 person-yr. Eleven SP were observed in the pelvic region: colon, rectu m, endometrium, and vagina, while 20 occurred outside the pelvis. Neither the incidence of pelvic SP nor that of extra-pelvic SP was greater than expected. The time from RT to diagnosis of a SP ranged from 1 to 16 yr with a median of 8 yr for pelvic SP, and 6 yr for extra-pelvic SP. The incidence of SP increased with the stage of cervix cancer; the increase is statistically significant. Mean ages of Stage II and Stage III patients were higher than that of Stage I patients. No significant difference of a possible carcinogenic effect of RT was noted between the patients treated with RT alone (6,000-8,000 rad) and patients treated preoperatively or postoperatively (3,000-5,000 rad). SP had no impact on the survival experience of the study population in the first 5 yr after treatment; after 5 yr some deaths were observed, but patients are at higher risk of death from other causes than from SP. (15 Refs)

91. PREVENTION OF RADIATION INJURY IN DIAGNOSTIC RADIOLOGY.

Vogel H

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Med Welt; 33(4):127-129 1982

Exposure to ionizing radiation during diagnostic procedures causes great concern among patients and health professionals. Radiation injuries may include early effects, such as burning and ulceration of the skin, and late effects, such as somatic and genetic damage. Damage to the gonads is of particular concern. Analysis of conditions of radiological studies indicates that, with proper precautions, the risks are minimal. (18 Refs) (In GER)

PUBLIC POLICY INVOLVING ENVIRONMENTAL AND OCCUPATIONAL CARCINOGENS

92. REPORT OF AD HOC TASK FORCE ON INDOOR AIR POLLUTION.

Dudney CS, Walsh PJ

Oak Ridge Natl. Lab., Oak Ridge, TN

Report of Ad Hoc Task Force on Indoor Air Pollution. Available from National Technical Information Service, Springfield, VA, as ORNL/TM-7679:, 245 pp., 1981.

The quality of air within a man-made structure is likely to be affected by energy conserving modifications made on that structure. Information was reviewed on indoor air pollution and the potential impact on human health of energy conservation measures, primarily those to be applied in residences. Studies that have been done and those in progress indicate that indoor air pollution may significantly affect human health. The task force concluded from its investigations that (1) the indoor environment is likely to include exposure to radon daughter nuclides, formaldehyde, carbon monoxide, nitrogen dioxide, respirable particulates, and asbestos, as well as other undefined pollutants; (2) indoor exposure may constitute 80 to 95% of the total exposure for some pollutants; (3) studies have not been done which provide a basis for an adequate assessment of indoor air quality; (4) some energy conservation measures reduce the rate of exchange between indoor and outdoor air; (5) reduced air exchange can lead to increased indoor levels of some pollutants; (6) increased indoor pollutant levels lead to increased exposure and increased risk of health impact; and (7) many federal agencies have an interest in various facets of indoor air pollution, but no agency has authority over the entire problem, and there has not been adequate coordination among the interested agencies. In light of the above, the task force recommends that a national policy on indoor air quality be developed and promulgated, the federal authority for establishment of indoor air quality guidelines and recommendations be clarified, and a lead agency be identified to develop a coordinated plan for studies of indoor air pollution with sufficient resources for its implementation. (Author abstract)

93. PESTICIDES IN AMERICAN AGRICULTURE AND PUBLIC HEALTH: REGISTRATION AND LEGISLATION.

Green M

No affiliation given

Int Pest Control; 23(5):122-124 1981

Regulation and control of pesticides in the United States are described. Current legislation requires registration and exact labeling for each pesticide. The Environmental Protection Agency (EPA) administers all regulations controlling pesticides. Concern over older pesticides has led to re-registration of all previously registered pesticides. The burden of registration or re-registration falls on the manufacturer. 'Gaps' in information must also be filled by the applicant. The EPA may decide a pesticide presents an unacceptable risk to health and environment; such a decision can be appealed by the applicant. While current modification of the regulations is possible, dismantling is unlikely. (no Refs)

94. INDUSTRIAL UNION DEPARTMENT, AFL-CIO V. AMERICAN PETROLEUM INSTITUTE: LIMITING OSHA'S AUTHORITY TO REGULATE WORKPLACE CARCINOGENS UNDER THE OCCUPATIONAL SAFETY AND HEALTH ACT.

Baird VC
Boston Coll. Environmental Affairs Law Review, Boston, MA
Boston Coll Environ Aff Law Rev; 9(3):623-685 1981

The United States' Supreme Court's decision in the case of Industrial Union Department, AFL-CIO vs American Petroleum Institute was analyzed to assess its potential effect on the Department of Labor Secretary's generic approach to regulating occupational carcinogens. The purpose of the Occupational Safety and Health Act of 1970, particularly citing sections 3(8) and 6(b)(5) of the Act, background information about benzene, Occupational Safety and Health Administration's (OSHA) generic approach to regulation of occupational carcinogens, and the split between the District of Columbia, the Second, and the Third Circuit Courts' opinions on the one hand, and the Fifth Circuit Court's opinions on the other hand, were discussed. The judicial split centered on the question whether the Act requires the Secretary t o estimate the expected benefits of setting a limit of carcinogens in the workplace prior to promulgating a standard. Benzene's properties and industrial uses, the health hazards created by benzene exposure, history of regulating benzene, OSHA's generic approach to the regulation of occupational carcinogens, regulatory problems created by cancer, and OSHA's attempt to reduce such problems, were discussed. The supreme court affirmed the Fifth Circuit decision setting aside the Secretary's regulation which reduced the permissible exposure limit for benzene from 10 ppm to 1 ppm. If the Supreme Court's decision causes other courts to require a threshold finding of significant risk, the Secretary's ability to regulate occupational carcinogens will be weakened. At the same time, the courts have yet to delineate the requirements which the Secretary of Labor must satisfy in order to validly promulgate a regulation for an occupational carcinogen on the basis of incomplete and inconclusive evidence. (326 Refs)

95. RADIATION RISK AND RADIOLOGICAL DIAGNOSTICS.

Angerstein W
Forschungsinstitut fur Lungenkrankheiten und Tuberkulose, Karower Str. 11, Haus 205, DDR-1115 Berlin, E. Germany
Radiol Diagn (Berl); 22(5):700-705 1981

Radiological examinations carry the risk of genetic damage and induction of cancer. The International Commission for Radiation Protection has published a list of risk factors. Problems involved in radiological examinations, particularly those that are required by law, are discussed as they apply to the German Democratic Republic. Man-made radiation hazards can be reduced by improving equipment, which can be very difficult, or by reducing the use of the equipment by setting stricter standards for use. Principles for discussion are presented. (21 Refs) (In GER)

96. IRRADIANCE MEASUREMENTS OF SOME UV SOURCES.

Cremonese M, Mariutti G, Matzeu M
Laboratorio delle Radiazioni, Istituto Superiore di Sanita, Rome, Italy
Health Phys; 42(2):179-185 1982

The use of UV radiation sources in the scientific, medical and industrial fields is becoming increasingly widespread. This poses the problem of protection and calls for a set of rules fixing the maximum exposure values for the organs subjected to the radiation hazard. The purpose of this work is to analyze some commonly used sources by first determining the spectral composition of the radiation emitted in the 200-400 nm range, and the total effective irradiance from which the maximum exposure time is inferred. The latter is measured on the basis of the criteria fixed by ACGIH. The final interest is that of providing some evaluation of the hazards connected with the use of some widely used sources. (Author abstract) (19 Refs)

97. NEEDS FOR PUBLIC HEALTH INTERVENTION AND NEEDS FOR NEW RESEARCH ON VINYL HALIDES AND THEIR POLYMERS: A PUBLIC POLICY PERSPECTIVE.

Hattis D
Center for Policy Alternatives, Massachusetts Inst. Technology, Cambridge, MA, 02139
Environ Health Perspect; 41:227-231 1981

Priorities for regulation and for research on the carcinogenic hazards of vinyl chloride (VC) and the related alkyl and vinyl halides, respiratory system hazards of poly(vinyl chloride), and reproductive hazards of VC, are discussed. The most effective use of limited resources depends on determination of the risk due to exposure under current standards and the likelihood of significant reduction in risk by revision of standards and enforcement. (8 Refs)

98. PROCESS-DEPENDENT RISK OF DELAYED HEALTH EFFECTS FOR WELDERS.

Stern RM
Danish Welding Inst., 2600 Glostrup, Denmark
Environ Health Perspect; 41:235-253 1981

Estimation of process-dependent risks for delayed health effects in welders is discussed. Welding is a widely used technology which employs a wide variety of processes and materials. Welding itself creates high local concentrations of fumes containing a large number of biologically active chemicals of varying toxicity. Content of the fumes depends on the specific materials used and other factors such as welding voltage. Exposure varies considerably depending on job situation. Chemical components of welding fumes include aluminum oxide, nitrogen dioxide, chromium (VI), copper, ozone, and molybdenum. In vitro and in vivo studies of representative welding fumes have demonstrated mutagenic, embryotoxic, cytotoxic, and genotoxic effects. Epidemiological studies indicate that welders may have increased risk of pneumoconiosis, siderosis, pulmonary fibrosis, and cancer. Wide variations in exposure and other factors necessitate the establishment of standard protocols in future research. For control of working conditions, emphasis on identifying occupational 'hot spots' where exposure is greatest is recommended. (94 Refs)

99. NATIONAL STEWARDSHIP. PROTECTION OF WORKERS' HEALTH.

Chiriboga J
Dept. Health, San Juan, PR
Am J Ind Med; 2(1):1-2 1981

The concept of 'National Stewardship' for the protection of workers' health is discussed. Morally, scientists are held responsible for illness and/or deaths caused by actions they perform, even when these actions are not directly related to the final effect. While the manufacture of the carcinogen benzidine has been sharply curtailed in the United States, manufacture has increased in a directly opposite ratio in developing coun-

tries. Technology is exported, but the way to protect workers' health is not exported. (no Refs)

100. DANGEROUS INDUSTRIAL MATERIALS.

Thiess AM, Stocker WG
BASF AG, 6700 Ludwigshafen/Rh., W. Germany
Zentralbl Arbeitsmed Arbeitsschutz Prophyl Ergonomie; 31(12):464-466,468-471 198 1

Dangerous industrial materials are discussed from the viewpoints of occupational medicine, toxicology, safety technology, and environmental chemistry. Systems of classification of occupational hazards are summarized. Specific subgroups of dangerous products are described; among the general types considered are carcinogens, mutagens, and substances affecting fertility. It is noted that there are currently 12 industrial substances classified as definite human carcinogens and 32 classified as animal carcinogens that may cause cancer in humans. The concept of threshold values of exposure is discussed with respect to occupational exposure to carcinogens; other factors (eg, age and heredity) that may influence cancer development are noted. Attempts to measure and monitor occupational exposure to hazardous substances are described. Concepts such as maximal workplace concentration, fetal toxicity (maximal workplace concentration for pregnant women), exposure to several hazardous substances or to a mixture of compounds, and biological tolerance values are considered. International programs, such as the International Occupational Safety and Health Information Center, designed to resolve the problems of occupational exposure to hazardous substances are described. (18 Refs) (In GER)

101. OCCUPATIONAL CANCER - MEASURES AIMED AT PREVENTION AND MONITORING RISKS.

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Bayer AG, D-5090 Leverkusen, W. Germany
Zentralbl Arbeitsmed Arbeitsschutz Prophyl Ergonomie; 31(12):472-474,476 1981

The problem of occupational exposure to carcinogens and attempts to monitor and minimize such exposure are discussed. The value of epidemiologic data and animal experiments in identifying potential carcinogens associated with specific jobs is described. Four levels of classification of human chemical carcinogens are defined. Monitoring of occupational exposure to carcinogens is examined with regard to identification of materials that can be substituted for newly identified carcinogens, the concept of threshold levels of exposure, standard levels for concentrations of hazardous substances at workplaces, attempts by industry to regulate and monitor hazards, and the role of the occupational physician. (9 Refs) (In GER)

ANALYTICAL AND METHODOLOGICAL ASPECTS OF CANCER EPIDEMIOLOGY

102. THE LIMITATIONS OF CASE-CONTROL STUDIES IN THE DETECTION OF ENVIRONMENTAL CARCINOGENS.

Crombie IK
ARC Epidemiology Res. Unit, Univ. Manchester, Stopford Building, Oxford Road, Manchester M13 9PT, England
J Epidemiol Community Health; 35(4):281-287 1981

Effects of various factors on the study size required to detect an increased risk of cancer following exposure to a carcinogen were investigated. Sample size, disease incidence, relative risk, and the fraction of the population exposed were considered. Bias and potential confounding factor s were assumed nonoperative. An 80% likelihood of detecting a risk (power of certainty), a 5% significance level, and a control-to-case ratio were assumed. A nonexhaustive, nonrandomized study of 115 published case-control reports found a range of 9-7,518 cases, with the largest being an 'all site' study; more than half the studies had less than 200 cases. The number of cases was limited by the amount of time needed to interview each case. Site-specific incidence was arbitrarily considered to be at most 250/100,000 persons, and a value of 10/100,000 was used. Ability to detect an increased cancer risk was similar for both rare and very common, over 90% of the population, exposure. It would require 6,917 cases studied to detect a 1.1 risk factor given a 50% population exposure. Any given risk factor requires the least number of cases for detection at a 40-50% exposure. In general case-control studies are unsuitable for detection of occupational carcinogens unless a localized population is at risk. Bias had a greater likelihood of affecting ability to detect a low risk factor than a high risk factor. (28 Refs)

103. POSSIBLE APPLICATIONS OF MUTAGENESIS TESTING IN CANCER EPIDEMIOLOGY.

Haenszel W, Magee PN, Tannenbaum SR, Correa P, Hill MJ, Reddy BS, Stemmermann GN, Bruce WR, Lipkin M, Nigro ND, Venitt S, Goldin BR, Hirayama T, Archer MC, Balis ME, Keefer LK, Goldman P, Balish E, Strobel HW, Eisenbrand G

Biometry-Epidemiology Program, Univ. Illinois, Sch. Public Health, Chicago, IL, 60616

Banbury Rep; 7:431-446 1981

Epidemiological applications of mutagenesis studies for stomach and large bowel cancer are reviewed. A cohort study of stomach cancer in a high-risk population in Colombia has been proposed; positive tests for mutagenicity in gastric juice samples were found only when nitrites were present. High-risk North American populations are suitable for bowel cancer studies. Linkage of pathology, fecal chemistry, and mutagenesis data will improve screening for large-bowel cancer and help to elucidate the pathways leading to large-bowel cancer. (20 Refs)

104. BIOLOGICAL MODELS AND STATISTICAL INTERACTIONS: AN EXAMPLE FROM MULTISTAGE CARCINOGENESIS.

Siemiatycki J, Thomas DC

Epidemiology and Preventive Medicine Res. Centre, Institut Armand-Frappier, Case postale 100, Laval-des-Rapides, Quebec, Canada

Int J Epidemiol; 10(4):383-387 1981

From the assessment of statistical interaction between risk factors it is tempting to infer the nature of the biologic interaction between the factors. However, the use of statistical analyses of epidemiologic data to infer biologic processes can be misleading. As an example, we consider the multistage model of carcinogenesis. Under this biologic model, it is shown, by means of simple hypothetical examples, that even if carcinogenic factors act independently, some pairs may fit an additive statistical model, some a multiplicative statistical model, and some neither. The elucidation of biological interactions by means of statistical models requires the imaginative and prudent use of inductive and deductive reasoning: it cannot be done mechanically. (Author abstract) (23 Refs)

GENERAL AND MISCELLANEOUS FACTORS

105. LUNG CANCER AND OCCUPATIONAL LUNG DISEASE.

Weiss W
Room 6401 New Coll. Building, Hahnemann Medical Coll., 230 North Broad St., Philadelphia, PA, 19102
Clin Chest Med; 2(2):289-300 1981

Epidemiology and etiology, natural history, diagnosis, therapy, and prognosis of lung cancer and occupational lung disease are discussed. Lung cancer has been associated with cigarette smoking and occupational causes such as asbestos exposure, ionizing radiation, and chemicals. Early detection and treatment have produced disappointing results, indicating that in most cases invasion and metastasis have occurred well before the 30th doubling. (65 Refs)

106. THE THYROID NODULE.

Klonoff DC, Greenspan FS
Metabolic Res. Unit, Univ. California, San Francisco, CA
Adv Intern Med; 27:101-126 1982

The epidemiology, pathology, diagnosis and treatment of thyroid nodules are discussed. The most common nonmalignant thyroid nodules are adenomas. Incidence of thyroid cancer (TC) among Americans is 2,700/yr with a female to male ratio of 2.8:1.0. While the incidence of TC has tripled since 1935, whether this is real or artifactual, is not known. Racial and geographic differences in TC are discussed as are the histological types. (130 Refs)

107. CONCEPTS IN CAUSALITY: CHEMICALLY INDUCED HUMAN URINARY BLADDER CANCER.

Lower GM
Center Human Systems, Inst. Environmental Studies, Univ. Wisconsin, WARF Building, 610 Walnut St., Madison, WI, 53706
Cancer; 49(5):1056-1066 1982

A significant portion of the incidence of human urinary bladder cancer can be attributed to occupational and cultural (tobacco smoking) situations associated with exposures to various arylamines, many of which represent established human carcinogens. A brief historical overview of research in bladder cancer causality indicates that the identification of causal agents and causal mechanism has been approached and rests upon information gathered at the organismal (geographical/historical), cellular, and molecular levels of biologic organization. This viewpoint speaks of a natural evolution within the biomedical sciences; a natural evolution from descriptive approaches to mechanistic approaches; and a natural evolution from more or less independent discipline-oriented approaches to hierarchically organized multidisciplinary approaches. Available information relevant to bladder cancer causality can be readily integrated into general conceptual frameworks to yield a hierarchial view of the natural history of urinary bladder cancer, a view consistent with contemporary natural systems and information theory and perhaps relevant also to other chemically induced epithelial cancers. Such frameworks are useful in appreciating the spatial and temporal boundaries and interrelationships in causality and the conceptual interrelationships within the biomedical sciences. Recent approaches in molecular epidemiology and the assessment of relative individual susceptibility to bladder cancer indicate that such frameworks are useful in forming hypotheses. (Author abstract) (62 Refs)

108. EPIDEMIOLOGY OF THE MOST FREQUENTLY OCCURRING TUMORS OF THE DIGESTIVE SYSTEM.

Naujoks-Heinrich S, Dolle W
Abteilung Innere Medizin I, Universitatsklinik, Otfried-Muller-Strasse 10, D-7400 Tubingen, W. Germany
Internist (Berlin); 23(1):1-9 1982

The epidemiology of esophageal, gastric, and colorectal cancer is reviewed. These types of cancer are described with respect to incidence, variations in incidence between countries, age and sex distribution of patients, lethality, exogenous factors that increase the risk of cancer development, benign conditions associated with each, and genetic predisposition to cancer development. Exogenous factors that increase the risk of development of esophageal cancer include alcohol and tobacco use; among the benign conditions frequently associated with this type of cancer are achalasia, scleroderma, Plummer-Vinson syndrome, and benign esophageal stricture. Genetic aspects of gastric and colorectal cancer are examined with respect to studies of the incidence of these diseases in Japanese people living in Japan and emigrants of Japanese ancestry. Exogenous factors that increase the risk of developing gastric cancer include occupational exposure to coal dust and exposure to trace elements such as asbestos in drinking water. Pernicious anemia, gastric polyps, and ulcera ventriculi are among the benign conditions associated with this type of cancer. The role of diet in the development of colorectal cancer is emphasized; the relative significance of animal fats, vegetables, and fiber in the diet is considered. The general field of epidemiology is discussed with regard to methodologic problems, including variations between countries in diagnostic methods and criteria as well as problems in documentation. (52 Refs) (In GER)

109. BLADDER CANCER.

Skrabanek P, Walsh A
Endocrine Oncology Unit, Mater Misericordiae Hosp., Dublin, Ireland
UICC Tech Rep Ser 60: 192 pp., 1981.

Data on the etiological factors, pathology, and biology of bladder cancer are summarized. Influence of the data on treatment is indicated and ideas for further research are collated. Topics discussed include pathology (classification, metastatic spread in fatal cases, pathogenesis and histogenesis, ultrastructural studies, cytology), carcinoma in situ (definition, description, cystoscopic appe arances, natural history, clinical presentation, therapy, other problems), endocrinology (diffuse endocrine system, peptidergic nervous system, paraneoplastic endocrinopathies), experimental models (animal models, bladder cells in culture), clinical and experimental aspects of therapy (superficial and invasive bladder cancer), clinical biochemistry and monitoring (biochemical tests, humoral and cellular immunity), etiology of bilharzial bladder cancer in Egypt, etiology (occupational carcinogens, tobacco and smoking, dietary factors, drugs, endogenous factors). (682 Refs)

110. ARSENIC-STATE OF THE ART.

Landrigan PJ
Div. Surveillance, Hazard Evaluations, and Field Studies, NIOSH, 4676 Columbia Parkway, Cincinnati, OH, 45226
Am J Ind Med; 2(1):5-14 1981

Occupational and domestic exposure to arsenic in United States of America is briefly reviewed: human elimination mechanisms; assay implications; acute poisoning; subacute and chronic toxicity to the skin (dermatitis, Bowen's disease, basal cell and squamous cell carcinomas), liver (cirrhosis, angiosarcoma), respiratory tract (lung cancer), and nervous (peripheral

neuropathy), cardiovascular (acrocyanosis), 'blackfoot disease' (gangrene), myocardial infarction, Reynaud's (phenomenon), and hematopoietic (disturbed erythropoiesis, equivocal cancer) systems. Animal cancer-induction studies remain negative. Mutagenicity/chromosomal aberration studies in bacterial-animal-human systems are touched upon. (50 Refs)

111. PRENATAL SUSCEPTIBILITY TO CARCINOGENESIS BY XENOBIOTIC SUBSTANCES INCLUDING VINYL CHLORIDE.

Rice JM
Perinatal Carcinogenesis Section, Lab. Comparative Carcinogenesis, NCI, Fort Detrick, Frederick, MD, 21701
Environ Health Perspect; 41:179-188 1981

Principles of transplacental carcinogenesis and prenatal susceptibility to vinyl chloride (VC) and related compounds are reviewed. Positive results of bioassay for carcinogenicity are indicated by a dose-related increase in incidence of tumors of one or more organ systems, a dose-related increase in multiplicity of tumors, or a shortening of latency periods. The largest number of carcinogens are small organic molecules, many of which share similar mechanisms of action. Most carcinogens require metabolic activation. The most common metabolic pathway for activation of carcinogens involves mixed-function oxidases. Assays of transplacental carcinogenicity must insure that exposure by other routes, such as through the mother's milk, is excluded. Studies in rats and mice have demonstrated that various compounds, including vinyl chloride (VC), are capable of transplacental carcinogenesis. Studies indicate that the nonhuman primate fetus is susceptible to carcinogens earlier in gestation than the rodent fetus, and different tissues are affected. Analogs of VC would be expected to have activities similar to VC. No evidence has been found suggesting that exposure of males to carcinogens leads to carcinogenesis in offspring of those males. (26 Refs)

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Section Clinical Oncology, Dept. Veterinary Surgery, Univ. California, Davis, CA, 95616

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ENVIRONMENTAL AND OCCUPATIONAL CARCINOGENESIS

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U.S. DEPARTMENT OF HEALTH AND HUMAN SERVICES
Public Health Service • National Institutes of Health • National Cancer Institute

HE 20.3173/2:

ENVIRONMENTAL FACTORS: POLLUTION

1. DIURNAL VARIATIONS IN THE MUTAGENICITY OF AIRBORNE PARTICULATE ORGANIC MATTER IN CALIFORNIA'S SOUTH COAST AIR BASIN.

Pitts JN, Harger W, Lokensgard DM, Fitz DR, Scorziell GM, Mejia V

Statewide Air Pollution Res. Center, Univ. California, Riverside, CA, 92521

Mutat Res; 104(1-3):35-41 1982

Diurnal variations in the mutagenicity of ambient particles collected simultaneously near downtown Los Angeles, California and at two downwind sites were examined to determine both the sources and ambient levels to which urban and suburban human populations may be exposed. Collections were made every 3 hr for a 24-hr period on two late summer days in 1980 and an early spring day in 1981 and assessed for mutagenicity using the Ames assay (using Salmonella strains TA98 and TA98NR). Ambient particulate mutagenicity displayed primary pollutant characteristics, responding both to vehicular emission rates and to atmospheric mixing ratios as shown by high correlation with CO, NOx and Pb levels. Results indicated that short-term peak mutagen densities can be much higher than the commonly reported 24-hr av. Nitroarenes may contribute substantially to the mutagenicity of ambient particulate matter in the study area. Chemical transformations of mutagenic material collected on the filters are apparently either very fast or very slow relative to the time scale used in these experiments. The increased contribution of promutagenic activity to the mutagenicity of the particles during periods of high emission rates, and its subsequent return to lower levels relative to direct activity, suggest that some promutagenic materials present in freshly emitted particulate organic matter are subject to rapid destruction in the atmosphere. (27 Refs)

2. COMPARISON OF THE GENOTOXIC ACTIVITIES OF EXTRACTS FROM AMBIENT AND FOREST FIRE POLLUTED AIR.

Viau CJ, Lockard JM, Enoch HG, Sabharwal PS

Graduate Center for Toxicology, Univ. Kentucky, 202 Medical Center Annex 5, Lexington, KY, 40536

Environ Mutagen; 4(1):37-43 1982

The genotoxicity of soluble, organic extracts of airborne organic particles was tested with use of the Salmonella reversion assay and the sister chromatid exchange (SCE) assay in cultured human lymphocytes. Airborne particles were collected in high volume air samplers in a non-industrial urban area under normal conditions (ambient) and during a period when dense smoke from a forest fire was carried by the wind into the area of the collectors. Salmonella strains TA98 and TA100 were used with and without Aroclor-induced rat liver S9 homogenate. While each sample caused increases in revertants in the Ames assay and increased incidence of SCE/cell, on the basis of the volume of air sampled, smoke-filled air induced 12-14x more bacterial reversions in TA100 and 16-38x more in TA98 than ambient (non-smoky) air. On a volume basis, 'smoky' air induced 43x more SCE in human lymphocytes than did ambient air. On the basis of extract weight, the 'smoky' air extract induced more SCE in human lymphocytes, but fewer bacterial revertants in the absence of S9 than the extract of 'nonsmoky' airborne particles. (17 Refs)

3. COMPARISON OF REGIONAL AND TEMPORAL TRACE SUBSTANCE DISTRIBUTION IN BULK PRECIPITATION AND ATMOSPHERIC DUST.

Thomas W

Lehrstuhl fur Hydrologie, Universitat Bayreuth, Bayrenth, W. Germany

Sci Total Environ; 23:369-378 1982

Regional and temporal variations in polycyclic aromatic hydrocarbons, trace metals, and gamma-benzene hexachloride in bulk precipitation and atmospheric dust were measured for classification of air pollution at 20 stations in Bavaria. Data were analyzed by cluster analysis with Ward's algorithm. Six pollution classes were found. Pollutants showed regional and temporal variations that should be taken into account in studies of air pollution. (16 Refs)

4. MUTAGENICITY OF AIRBORNE PARTICLES IN RELATION TO TRAFFIC AND AIR POLLUTION PARAMETERS.

Moller M, Alfheim I, Larssen S, Mikalsen A

Central Inst. for Industrial Res., P.O. Box 350, Blindern, Oslo 3, Norway

Environ Sci Technol; 16(4):221-225 1982

Air samples were taken day and night in a park and at 2 and 25 m heights in a nearby heavy traffic street. Extracts were tested for mutagenicity with and without S9 metabolic activation on Salmonella typhimurium TA98. S9 increased mutagenicity 2-3x in the 2 m street day samples. Day samples, park or street 25 m, were not influenced by S9, and had only 5-25% of the activity of day 2 m street samples. Depression of 2 m street activity at night corresponded to decrease in traffic. (26 Refs)

5. CARCINOGENICITY OF AIRBORNE FINE PARTICULATE BENZO(A)PYRENE: AN APPRAISAL OF THE EVIDENCE AND THE NEED FOR CONTROL.

Perera F

Natl. Resources Defense Council, Inc., 122 East 42nd St., New York, NY, 10168

Environ Health Perspect; 42:163-185 1981

Carcinogenicity of environmental benzo(a)pyrene (BAP) is reviewed. BAP is a polycyclic aromatic hydrocarbon consisting of five aromatic rings that is formed during combustion of fossil fuels; the compound is the most important carcinogen in soot, cigarette smoke, coal gasification effluent, and coke oven emissions. Three sources are expected to increase atmospheric levels due to energy/fuel conservation: stationary combustion of coal and synthetic fuels and increased use of diesel fuel by automobiles. The primary route of human exposure to BAP is inhalation, where the compound is deposited in the lower lung and eluted into surrounding tissue. Most carcinogens are thought to act through strong electrophilic metabolites which bind covalently to DNA of the lung. Animal data indicate that the action of BAP is enhanced by other chemicals such as sulfur dioxide and other irritant gases. A threshold dose for BAP has not been found; the effect of small doses of BAP may be greater than that for a single high dose. Mixtures containing BAP (urban air, industrial emission, cigarette smoke) result in increased carcinogenic effect. Since the early 1970's BAP has tested positive in 20 in vitro short term test systems considered predictive for human carcinogenicity/mutagenicity. Quantitative risk assessment for BAP is confounded by problems in extrapolating high doses in small animal studies to low doses in humans and by the variables involved in monitoring data. (186 Refs)

6. COMPARATIVE STUDY OF CONTAMINATION OF PLANT FOOD PRODUCTS BY CARCINOGENIC POLYCYCLIC AROMATIC HYDROCARBONS (PAH) IN THE USSR AND GDR.

Shabad LM, Khesina AIa, Solenova LG, Dikun PP, Kalinina IA, Engst R, Fritz V
All-Union Cancer Res. Inst., Moscow, USSR
Vopr Pitan; (1):56-59 1982

The results of comparative evaluation of the concentrations of benzo(a)pyrene (BP) in the soil and in various agricultural plants in the Soviet Union and in the East Germany are reported. The increase of BP level in the soil from 0.5-1,000 ug/kg to greater than 15,000 ug/kg resulted in the increase of BP concentration from 0.4 ug/kg to 17.0 ug/kg in the wheat grain and from 2.0 ug/kg to 10.0 ug/kg in the sunflower seed. (11 Refs) (In RUS)

7. STUDY OF SOIL BENZO(A)PYRENE UPTAKE BY POTATO TUBERS AND WHEAT AND MILLET GRAINS.

Dikun PP, Kalinina IA, Kameraz AIa, Zheludeva ZP, Rezchikov VA, Goncharova LM
N. N. Petrov Res. Inst. Oncology, USSR Ministry Health, Leningrad, USSR
Vopr Onkol; 28(1):54-57 1982

A significant correlation between benz(a)pyrene concentration in soil and potato tubers was established for its soil level of 0.6-50.0 mg/kg. This points to potato uptake of the carcinogen even at low levels of pollution. Absence of correlation between benz(a)pyrene concentrations in grain (husk) and soil even for relatively high levels of soil pollution (up to 320 ug/kg) shows that wheat and millet grains do not absorb the carcinogen. (Author abstract) (15 Refs) (In RUS)

8. EXPOSURE OF MAN TO ENVIRONMENTAL NICKEL - AN EXPOSURE COMMITMENT ASSESSMENT.

Bennett BG
Monitoring and Assessment Res. Centre, Chelsea Coll., Univ. London, Fulham Road, London SW10 0QX, England
Sci Total Environ; 22(3):203-212 1982

The exposure commitment method to environmental pollutant assessment was used to study exposure of man to environmental nickel. An estimated mean body content of 500 ug Ni was determined, with an effective mean retention time of 200 days. Dietary intake of Ni appears to be more important than inhalation or ingestion through drinking water. Current levels of Ni in the background environment were determined. (29 Refs)

9. RELEVANT ENVIRONMENTALLY DAMAGING TOXIC AGENTS.

Funke E, Hamacher J
Ministerium fur Arbeit, Gesundheit, und Soziales, Horionplatz 1, 4000 Dusseldorf 1, W. Germany
Oeff Gesundheitswes; 44(1):1-5 1982

Two public sports fields were closed due to the high As content in their ground. The problem of toxic agents again was brought into the open. Limit values of toxic agents were discussed and reassessed. High values of benzene in urine, and the changes in the inhabitants blood, of a city in Ruhr, were probably due to the release of benzene from a coking plant. (no Refs) (In GER)

ENVIRONMENTAL FACTORS: COMMERCIAL PRODUCTS

10. CRITIQUE OF A STUDY OF CANCER INCIDENCE AND ALCOHOL/CIGARETTE CONSUMPTION IN HAWAII.

Hernandez-Llamas H, Kimball AW
Dept. Biostatistics, Johns Hopkins Univ. Sch. Hygiene and Public Health, Baltimore, MD, 21205
Br J Cancer; 45(1):150-154 1982

A reported study of the association between cancer incidence and consumption of alcohol and/or cigarettes among residents of Hawaii is criticized. Conclusions were drawn from comparison of age-adjusted incidence rates for 10 sex-ethnic groups with consumption indicators by means of analysis of covariance and linear-regression techniques. Shortcomings in the analyses considerably reduced the value of the study. The problem of confounding factors was not satisfactorily addressed and the conclusions depended on an arbitrary choice of a standard population. The Hawaiian population was both younger than that represented by the world standard and elderly persons were overrepresented in some sex-ethnic groups. Difference in past and current consumption patterns was another possible source of distortion, as was difference in the target population of the survey and the population basis for the tumor registry. Problems with adjustment procedures are discussed. The reported analysis is replicated using different populations as standards, demonstrating that different conclusions are possible. Observations of the regression analysis are outlined. The reported study involved of regression methods for adjustment, unweighted linear regression for variables with unequal standard deviation with non-linear relationships to consumption, omission of important interactions, and improper standardization of incidence rates. (7 Refs)

11. IMPORTANT NEW FINDINGS ON PASSIVE SMOKING.

Schmidt F
Forschungsstelle fur praventive Onkologie, Universitat Heidelberg, Maybachstr. 14-16, D-6800 Mannheim, W. Germany
Oeff Gesundheitswes; 44(2):130-132 1982

Five arguments for defining passive smoking as a true health risk, rather than merely an annoyance, are presented. Tobacco smoke contains greater than 40 carcinogenic substances. Most of these substances are not inhaled by the active smoker alone. Carcinogenicity of the substances has been confirmed in animal studies. Carcinogens in smoke show a summation effect without evidence of a threshold effect. Recent studies are cited to support arguments for imposition of legal restrictions on smoking in public. (35 Refs) (In GER)

12. BAN OF UREA-FORMALDEHYDE FOAM INSULATION.

Consumer Product Safety Commission
(c/o P. Galvydis), Consumer Product Safety Commission, Washington, DC, 20207
Fed Regist; 47(64):14366-14419 1982

The Commission issues a rule banning urea-formaldehyde (UF) foam insulation in residences and schools. The Commission's ban is based on findings that UF foam insulation is being distributed in commerce and presents an unreasonable risk of injury from irritation, sensitization, and cancer because of the release of formaldehyde gas from the product after it is in-

stalled. The Commission has evaluated the effectiveness of existing standards as well as other possible approaches to controlling consumer exposure to formaldehyde gas released from the product. The Commission finds that no feasible standard, including labeling or information disclosure, would adequately protect the public from the risk of injury associated with the product. In a document published in the Proposed Rule section of this separate part, the Commission withdraws a previously proposed rule that would have required potential purchasers of UF foam insulation to be given notice of some of the possible adverse health effects associated with this product. In the notices, section of this separate part, the Commission also denies a petition from the Formaldehyde Institute, which requested that the Commission establish a mandatory standard to address the risk of injury associated with UF foam insulation. (Author abstract) (229 Refs)

ENVIRONMENTAL AND OCCUPATIONAL FACTORS: RADIATION

13. MELANOMA OF THE SKIN: SOME EPIDEMIOLOGICAL ASPECTS.

Green A
Queensland Inst. Medical Res., Australia
Aust Fam Physician; 11(1):7-12 1982

Epidemiological aspects of melanoma of the skin are reported. The incidence and mortality rate of cutaneous melanoma is increasing in several countries. Types of melanoma include Hutchinson's melanotic freckle, superficial spreading melanoma, nodular melanoma, and acral lentiginous melanoma. Sun exposure is causally related to melanoma and depends on latitude, skin pigment, and body site exposed. Other etiological factors include hormones, socioeconomic status, and heredity. Current preventive concepts include awareness of characteristics of UV radiation, protective clothing, and use of sunscreens. (29 Refs)

14. EFFECTS OF LOW-DOSE RADIATION. A CORRELATION STUDY.

Edling C, Comba P, Axelson O, Flodin U
(c/o Axelson) Dept. Occupational Medicine, Univ. Hosp., S-581 85 Linkoping, Sweden
Scand J Work Environ Health; 8(Suppl1):59-64 1982

Based on information in the literature, five types of malignancies (lung, breast, and pancreatic cancer, leukemia, and multiple myeloma) as probably respondent to irradiation induction and therefore likely to correlate with background radiation were chosen for the correlation study on effects of low-dose radiation. Mortality rates age-standardized directly for lung and breast cancer and leukemia during 1969-1978 and for pancreatic cancer and multiple myeloma during 1961-1973 in the counties of Sweden and for persons 40 yr old and over, along with estimates of background radiation (cosmic radiation excluded), Pearson coefficients and p-values are presented. Significant correlation was observed between the estimates of background radiation and lung cancer, for both males and females. A similar correlation was observed for pancreatic cancer in both sexes. Leukemia showed a correlation of borderline significance for males and a weaker correlation for females. Breast cancer (in women only) and multiple myeloma did not show any significant correlation. Risk estimates for lung cancer per working level mo (WLM) and per 10(6) person-yr for persons greater than 50 yr old in various Swedish populations (including Zn-Pb miners) and estimates given in a previous report indicate that 25-35 cases per 10(6) person-yr and per WLM might result from radon daughter exposure. (31 Refs)

15. RECENT DATA ON RADIATION HAZARDS.

Lindell B
Statens stralskyddsinstitut, Stockholm, Sweden
Lakartidningen; 79(6):393-397 1982

The biological effects and hazards of ionizing radiation are discussed. The cancer risk of low radiation doses is subject to great interindividual variations and is affected by many factors, such as the occurrence of other carcinogens and variations in promoting effects. The cancer risk of ionizing radiation is estimated as 0.02 case of death per person, and doses starting with 100 rads. (no Refs) (In SWE)

16. RADON AND THORON DAUGHTERS IN HOUSING.

Gunning C, Scott AG
DSMA/ACRES, 4195 Dundas St. West, Toronto, Ontario M8X 1Y4, Canada
Health Phys; 42(4):527-528 1982

Radon and thoron daughter concentrations in housing expressed in Working Levels (WL) were estimated by a modified Kusnetz technique (2 alpha counts) in a region containing uranium mines. The air filter samples were taken each morning in house basements as part of the routine survey. A total of 174 filters from 95 different houses were evaluated during 1 mo. House windows were closed when the samples were taken. Results indicate that the WL for thoron daughters in houses is insignificant compared with the WL for radon and its remedial action limit of 20 milliWL. (2 Refs)

17. RADON DAUGHTER EQUILIBRIUM AND UNATTACHED FRACTION IN MINE ATMOSPHERES.

Stranden E, Berteig L
State Inst. Radiation Hygiene, Osterndalen 25, 1345 Osteras, Norway
Health Phys; 42(4):479-487 1982

Measurements of the equilibrium between radon and its daughters in mine atmospheres are presented. The situation in mines seems to be too complex to be described by any simple theoretical model. There is however a good correlation between the equilibrium factor, F, and the individual daughter ratios. This suggests that the individual daughter concentrations may be assessed by Kusnetz-measurements of the equilibrium factor, F. Measurements by the wire screen method indicate that the dust concentration is the main influencing factor upon the unattached fraction of the radon daughters. The unattached fraction of the potential alpha-energy was lower than 0.05 in most mining situations. In areas with very clean air, the unattached fraction may however be higher than 0.3. Measurement indicated a good correlation between the unattached fraction of the potential alpha-energy and the unattached fraction of the individual daughter products. This suggests that assessments of the unattached fraction of the individual daughters may be obtained by using the Kusnetz method for measurements on the screen and back up filter. (Author abstract) (11 Refs)

18. RADON DAUGHTER EXPOSURE TO URANIUM MINERS.

Cohen BL
Univ. Pittsburgh, Pittsburgh, PA, 15213
Health Phys; 42(4):449-457 1982

Radon exposures to US uranium miners under present conditions average about 1.3 WLM per yr approx 60 WLM per full working lifetime. This is intermediate between (a) the lowest exposures for which there have been excess lung cancers reported among US miners (120-240 WLM) and (b) average environmental radon exposures (16 WLM), so models based on these two situations are used to estimate expected effects on present uranium miners. In Model A, the loss of life expectancy is 45 days, the SMR (standardized mortality ratio) for lung cancers is 1.10, and the SMR for all causes between ages 18 and 65 is 1.013. In Model B there are 10 days, 1.03 and 1.002 respectively. It is shown that the radon exposures to miners are similar to those to millions of Americans from environmental exposure, and that miner health risks are comparable to those of other radiation workers. Their lung cancer risk from radon is 7-50 times less than their job-related accident mortality risk, and represents 0.7-4% of their total risk in mining. Miners suffer from many diseases with SMR very much larger than that for radon-induced lung cancer, and there are many other occupations and industries with far higher SMR for lung cancer than that from radon exposure to miners. (Author abstract) (20 Refs)

19. NEPTUNIUM - THE NEGLECTED ACTINIDE: A REVIEW OF THE BIOLOGICAL AND ENVIRONMENTAL LITERATURE.

Thompson RC
Biology Dept., Pacific Northwest Lab., Richland, WA, 99352
Radiat Res; 90(1):1-32 1982

Biological and environmental behavior and biomedical effects of isotopes of neptunium are reviewed. Potential sources of human exposure are fallout from nuclear weapons, effluent cooling water from fission reactors, industrial processing of 237Np produced in fission reactors, and its presence as a long-lived component of high-level nuclear wastes. Due to a long half-life, and because Np is more environmentally and physiologically available than other heavy-metal alpha emitters, 237Np has been estimated to be the most hazardous material remaining in waste from about 10,000 yr to 30 million yr after disposal. Measurements of Np in the environment are described. Experimental studies relating to Np in the environment are reviewed with respect to environmental chemistry and the food chain. Animal biokinetic studies involving absorption from and retention in the gastrointestinal tract, lung, skin, sc tissues, and deposition and retention in systemic organs (blood, bone, liver, kidney, spleen, adrenal, gonads, placenta-fetus, other tissues, excreta, and enhanced excretion) are discussed. Early and late effects of Np exposure in animal toxicity studies are presented. Evidence indicates that Np might be more carcinogenic than other actinides, possibly due to chemical effects supplementing radiation effects. The potential hazard of Np exposure to humans is discussed, and exposure limits as outlined by the International Commission on Radiological Protection are reported. (89 Refs)

20. COMPARISON OF PHYSICAL CHEMICAL PROPERTIES OF POWDERS AND RESPIRABLE AEROSOLS OF INDUSTRIAL MIXED URANIUM AND PLUTONIUM OXIDE FUELS.

Eidson AF
Inhalation Toxicology Res. Inst., Lovelace Biomedical and Environmental Res. Inst., P.O. Box 5890, Albuquerque, NM, 87185
Health Phys; 42(4):531-536 1982

Physical and chemical properties that may be important in determining the metabolism of accidentally released, inhaled aerosols were characterized and the properties of bulk powders and the respirable fraction they include were compared. The studies were a part of a program to relate physical and chemical properties of respirable aerosols to the subsequent distribution of radiation dose in tissues of laboratory animals exposed to these aerosols by inhalation. Analysis of mixed uranium and plutonium oxide aerosols inhaled by fuel fabrication workers is discussed. (19 Refs)

21. UNEXPECTED 226RA BUILD-UP IN WET-PROCESS PHOSPHORIC-ACID PLANTS.

Lardinoye MH, Weterings K, Van de Berg WB
(c/o Wetterings), Central Lab., DSM P.O. Box 18, 6160 MD Geleen, The Netherlands
Health Phys; 42(4):503-514 1982

During an investigation of the distribution or radium and uranium over the different process streams in phosphoric-acid production and in the nitrophosphate route, a higher than average radiation level was detected in the vicinity of some piping and vessels near the gypsum filters. This higher radiation level is caused by radium, which, as a decay product in the 238U series, is present in very low concentrations (1-50 pCi 226R/g) in the phosphates used for fertilizer production. Specific research later on established that there were detectable radiation levels around vessels and piping in other phosphoric-acid works as well. It turned out that in all factories the filter part, and especially the washing-acid section showed the highest radiation-level. In the piping of the gypsum filter, through which the washing acid is discharged, a scaling of barium sulfate and calcium sulfate with a higher radium concentration (+-0.1 Ci/g) is formed. The radium ions appeared to be incorporated in the barium sulfate lattice, hence the solubility of the radium precipitate is very low. The danger of internal pollution, for example in cleaning operations by radio-active intake or inhalation of radon is very small in the cases described. The risk of external radiation can be prevented by periodically cleaning (every 1-3 yr) the equipment in which the radio-active scaling is formed. (Author abstract) (5 Refs)

22. 137CS CONCENTRATIONS IN NORTHERN ALASKAN ESKIMOS, 1962-79: EFFECTS OF ECOLOGICAL, CULTURAL AND POLITICAL FACTORS.

Hanson WC
Ertec Northwest, Inc., 420 L St., Suite 406, Anchorage, AK, 99501
Health Phys; 42(4):433-447 1982

Concentrations of worldwide fallout 137Cs were measured in the lichen-caribou-Eskimo food chain of northern Alaska during the period 1962-79. Pronounced inputs of fallout occurred after major nuclear weapons tests in the atmosphere and 137Cs was transmitted through the food chain to Eskimos with about a 2-yr delay due to environmental parameters. Caribou (Rangifer tarandus) meat sampled during spring harvest contained 4 times the 137Cs concentration of lichens obtained

from their winter range. Calculated caribou meat ingestion rates of Anaktuvuk Pass Eskimos during winter ranged from approx 1 kg/day in 1964 to 0.16 kg/day in 1977. Several environmental factors affected seasonal patterns and amounts of 137Cs transferred through the food chain. Maximum 137Cs concentrations of approx 20 nCi/kg body wt in Eskimos occurred in 1964 and have now decreased to approx 0.5 nCi/kg, largely because of cultural and political factors. Radiation doses from 137Cs body burdens during the study period ranged from 60 mrad/yr in 1962 to approx 140 mrad/yr during the 1962-64 maxima and decreased to 8 mrad/yr in 1979. (Author abstract) (62 Refs)

23. 129I IN MISSOURI THYROIDS.

Oliver LL, Ballad RV, Manuel OK
Dept. Chemistry, Univ. Missouri, Rolla, MO, 65401
Health Phys; 42(4):425-432 1982

Concentrations of 129I and values of the 129I/127I ratio are reported in one sample of indigenous vegetation and in over 40 additional individual thyroids of man, wild deer and beef cattle in Missouri. The results of this and other studies in our laboratory indicate the following order for successively lower values of 129I/127I ratios in the local environment: Rain, wild deer, commercial milk, beef cattle and human. The value of the 129I/127I ratio in the single vegetation sample is intermediate to the mean values in wild deer and commercial milk, but well within the range of values observed in both. These results are consistent with a geochemical cycle in which iodine that is enriched in 129I is transported via air into the central US and then diluted with other iodine - especially mineral iodine that is added to the diets of domesticated animals - as the iodine deposited from air moves through the local ecosystem. Differences in the diets of beef and dairy cattle or differences in the biological life-times of iodine in thyroids and mammae, and hence the degree of equilibrium with body iodine, may explain the lower value of the 129I/127I ratio in beef thyroids than in milk. (Author abstract) (21 Refs)

24. FAILURES AND CRITIQUE OF THE BEIR III LUNG CANCER RISK ESTIMATES.

Cohen BL
Univ. Pittsburgh, Pittsburgh, PA, 15260
Health Phys; 42(3):267-284 1982

The BEIR III prediction of lung cancer incidence due to environmental radon is more than twice the actual incidence of all lung cancers among non-smokers. No more than 10% of all lung cancers in non-smokers can be due to radon. When alternative causes of lung cancer are considered the BEIR III estimates of lung cancer risk due to environmental radon are too high for non-smokers by at least a factor of 40. The evidence for synergism between smoking and radiation induced lung cancer is reviewed, and the BEIR III estimates for smokers are too high by at least a factor of 10. The bases for the BEIR III model are reviewed, and it must be based almost entirely on the Czechoslovakian uranium miners; its estimated risks are higher than would be obtained from all other studies. The possibility that there are other causes than radon for lung cancer among miners is discussed. Other causes can easily explain all cases where lung cancer rates are high, but it is very difficult to explain the much lower rates for US uranium miners (5x lower than BEIR III estimates) and other similar situations. The BEIR III lung cancer model is strongly supra-linear (ie concave downward), contrary to the bulk of experimental and theoretical evidence on that question, and contrary to other statements in the BEIR III Report. The BEIR III lung cancer risk estimates are probably too high by a factor of 2-5 for miners, and because of different smoking habits, the risk to the public may be another factor of 2 lower. The remainder of the overestimate for effects of environmental radon must be due to non-linearity in the dose-response relationship. (56 Refs)

OCCUPATIONAL FACTORS: SPECIFIC AGENTS OR INDUSTRIES

25. CONCENTRATIONS AND CHARACTERISTICS OF AMPHIBOLE FIBRES IN THE LUNGS OF WORKERS EXPOSED TO CROCIDOLITE IN THE BRITISH GAS-MASK FACTORIES, AND ELSEWHERE, DURING THE SECOND WORLD WAR.

Morgan A, Holmes A
Environmental and Medical Sciences Div., Atomic Energy Res. Establishment, Harwell, Oxfordshire OX11 0RA, England
Br J Ind Med; 39(1):62-69 1982

Concentration and length distributions of uncoated and coated amphibole fibers in the lungs of 27 workers at the Leyland, Nottingham, and Blackburn gas-mask factories were measured after death with the light microscope using the membrane filter technique. Measurements were also made on a worker exposed to crocidolite at the Chemical Defense Experimental Establishment, Porton, and on three miners from the Wittenoom mine in Wester Australia where the crocidolite used in the manufacture of military respirators is reported to have originated. In selected cases, fiber concentrations and dimensions were also measured with the electron microscope. All but two subjects died with a mesothelial tumor. Fiber concentrations ranged from 7 x 10(4) to almost 10(9) fibers/g dry wt. There appeared to be no relation between latent period and fiber concentration. The significance of wide range of fiber concentrations which was associated with the development of mesothelial tumors is discussed and also the relation between the relative frequency and dimensions of uncoated and coated fibers. (Author abstract) (16 Refs)

26. MORTALITY OF FEMALE GAS MASK ASSEMBLERS.

Wignall BK, Fox AJ
(c/o Fox) Dept. Mathematics, St. George's Hosp., City Univ., London, England
Br J Ind Med; 39(1):34-38 1982

A 30-yr follow-up study of the mortality of 500 women employed in manufacturing gas masks during the Second World War showed a pronounced excess of deaths from mesothelioma and lung cancer. Although these women were subject only to short periods of exposure, greater excesses were found for those exposed for between 1 and 5 yr than for those exposed for under 1 yr. Even in the latter group, however, five deaths from lung cancer and four deaths from mesothelioma were recorded compared with 1.5 deaths and 0.1 deaths expected (p approx 0.02). An excess of deaths from cancer of the ovary was also found, and this appeared to be related to exposure to asbestos. (Author abstract) (6 Refs)

27. DEVELOPMENT OF RADIOLOGICAL AND CLINICAL EVIDENCE OF PARENCHYMAL FIBROSIS IN MEN WITH NON-MALIGNANT ASBESTOS-RELATED PLEURAL LESIONS.

McMillan GH, Rossiter CE
Medical Res. Unit, HM Naval Base, Devonport PL1 4RU, England
Br J Ind Med; 39(1):54-59 1982

After assessment of radiographs taken in 1966, 201 men employed at HM Dockyard, Devonport, were judged to have pleural abnormalities due to exposure to asbestos but to be free from small opacities (ILO U/C 1971 category 1/1 or more), mesothelioma, or bronchial carcinoma. By 1976, 32 of these men had died. Of the survivors, 155 were re-examined to determine the attack rates of parenchymal fibrosis or malignant disease, or both. In 1976, 16 (10.3%) of the survivors had radiographs showing small opacities of category 1/1 or more. When additional clinical criteria had to be satisfied before a diagnosis of parenchymal fibrosis was made the attack rate in the survivors was 4.5%. These attack rates were substantially higher than those observed in a sample of men with no initial pleural abnormality but were unrelated to age, smoking habit, occupation, duration of exposure to asbestos, or type of pleural abnormality. The number of cases of malignant disease was too small to allow any reliable conclusions. (Author abstract) (16 Refs)

28. CANCER AND POLLUTED WORK PLACES: A CASE-CONTROL STUDY.

Kjuus H, Lislerud A, Lyngdal PT, Omland H, Stave O, Langard S
Dept. Occupational Medicine, Telemark Sentralsjukehus, Olavsgt. 26, N-3900 Porsgrunn, Norway
Int Arch Occup Environ Health; 49(3/4):281-292 1982

The working histories of 103 male hospital patients with cancer were divided into periods arbitrarily defined as clean or polluted, a crude measure for the total industrial exposure of a worker throughout life. A comparison was made with age-matched hospital patient controls (HPC) not having cancer. A subgroup of 30 subjects with lung cancer was also compared to another set of HPC with similar smoking habits, but free of any lung disease. The pollution was defined as contact only by regular inhalation of dust, vapors, or aerosols. The number of years at polluted jobs was totalled, omitting the 10 yr prior to study. Subjects and controls still having 10+ yr of pollution jobs were considered exposed (E), while those with under 10 yr were unexposed (UE). The lung cancer group's UE were those with under 5 yr exposure. Overall the percentage of E group subjects and controls was the same. The lung cancer subset's E group was significantly more at risk than that of both control groups ($p = 0.02$-0.03). In the overall group only lung cancer and malignant mesothelioma risks were significant (p less than 0.05). There was a significant correlation with risk and length of exposure ($p = 0.02$), but not with asbestos exposure, in the lung cancer group. (24 Refs)

29. CRITERIA FOR THE DIAGNOSIS OF ASBESTOSIS AND CONSIDERATIONS IN THE ATTRIBUTION OF LUNG CANCER AND MESOTHELIOMA TO ASBESTOS EXPOSURE.

McCullagh SF, Aresini G, Browne K, Korsgaard B, Lepoutre J, Lesage M, Lewinsohn HC, Mansour F, Mills MC, Paul WR, Raffaelli C, Smither WJ, Tucker RB, Murray R, Loison C
No affiliation given
Int Arch Occup Environ Health; 49(3/4):357-361 1982

Asbestosis is defined as an irreversible, diffuse fibrosis of the parenchyma of the lung due to inhalation of asbestos fibers. The criteria for diagnosis are discussed: (a) history, (b) clinical signs and symptoms, (c) radiological aspects, (d) other investigations (asbestos [ferruginous] bodies, biopsy), (e) lung function abnormalities, (f) differential diagnosis. Mesothelioma (M) attributable to asbestos has a latency of 20-40+ yr, although it need not be associated with even minimal asbestosis. Diagnosis of M should be based on necropsy, with attention given to excluding the tumor being a metastasis from another site. In industrial populations, while most M is associated with asbestos, no such association is seen in 10-30% of the cases. While smoking does not affect the likelihood of contracting M, it does increase the likelihood of asbestos workers contracting lung cancer. Except at lower levels of exposure, asbestos workers are at risk for bronchogenic cancer. There is no distinctive pathology for asbestos-induced lung cancer. In the presence of asbestosis, an adenocarcinoma situated peripherally and in a lower zone is indicative of asbestos exposure 15 or more yr previously. (no Refs)

30. PLEURAL PLAQUES AT AUTOPSY IN TURIN: A STUDY ON 1,019 ADULT SUBJECTS.

Andrion A, Colombo A, Dacorsi M, Mollo F
Istituto di Anatomia e Istologia Patologica dell'Universita, Via Santena 7, 10126 Torino, Italy
Eur J Respir Dis; 63(2):107-112 1982

Hyaline pleural plaques were searched for in 1,019 consecutive autopsies performed on adults in Turin. These pleural lesions were found in 173/706 males and 22/313 females (p less than 0.001). The difference between the sexes was not significant under the age of 50 yr but was highly significant (p less than 0.001) in the age groups above 50 yr. The severity of the pleural lesions has been graded according to the total area of the plaques. The most severe pleural abnormalities can be considered as connected with previous occupational exposure to asbestos. (Author abstract) (27 Refs)

31. ANALYSIS OF A FOLLOW-UP STUDY. AN EXAMPLE FROM ASBESTOS-EXPOSED INSULATION WORKERS.

Campbell MJ, Langlands JH
Dept. Community Medicine, Southampton General Hosp., South Academic Block, Southampton S09 4XY, England
Scand J Work Environ Health; 8(Suppl1):43-47 1982

Analysis of a follow-up study conducted between 1975-1978, which included 255 male insulation workers in Belfast, is discussed. At the time of the follow-up, 35 of the men had died and 47 could not be traced. Forced expiratory vol in 1 sec and forced vital capacity were measured by spirometry, and the av of the last three of five attempts was taken. Residual vol (RV), total lung capacity (TLC), and the transfer factor (TLCO) were measured also. A total of 166 men had repeat radiology. Analysis focused on small parenchymal opacities. Thirty-two percent of the smokers showed increased profusion compared with 12% of non- or former smokers. The effect of smoking on lung function is presented for values corrected to age 45 yr and height 1.70 meter. Smokers had a large deficit in TLCO and a larger RV/TLC % than nonsmokers. No significant differences in lung function were observed between subjects who smoked at the time of both surveys and subjects who claimed to have given up smoking between the surveys. A discriminant analysis was carried out to determine whether a combination of lung function indices could predict progression. TLCO and TLC were plotted for progressors and nonprogressors. Results indicated that progressors contain a higher proportion of subjects in 0/1 category of the International Labor Organization

classification, but within each subcategory progressors are associated with a lower TLCO. Results confirmed that subjects may suffer a deficit in lung function before disease becomes apparent in radiographs. (12 Refs)

32. MESOTHELIOMA AND FIBER TYPE IN THREE AMERICAN ASBESTOS FACTORIES. PRELIMINARY REPORT.

McDonald AD, Fry JS
Institut de Recherche en Sante et en Securite du Travail, 505 Boulevard de Maisonneuve Quest, Montreal, Canada
Scand J Work Environ Health; 8(Suppl1):53-58 1982

Information on the health effects, especially mesothelioma, of manufacturing chrysotile asbestos was studied. Two large chrysotile manufacturing plants, a textile factory and a friction materials factory, were studied; for comparison, a third factory which manufactured textiles and friction materials using chrysotile, crocidolite, and amosite, was included. Mortality from malignant mesothelioma in the three plants was compared and the exposure-response relationship for malignant respiratory and digestive diseases and for nonmalignant respiratory disease was estimated. (18 Refs)

33. FOLLOW-UP RESPIRATORY MEASUREMENTS IN QUEBEC CRYSOTILE ASBESTOS MINERS AND MILLERS.

Becklake MR, Thomas D, Liddell FD, McDonald JC
Dept. Epidemiology and Health, McGill Univ., 3775 University St., Montreal, Quebec H3A 2B4, Canada
Scand J Work Environ Health; 8(Suppl1):105-110 1982

Serial follow-up measurements were performed on 1,015 current male workers in the chrysotile mines and mills of Quebec to assess the relationship of change over time to occupational exposure; age, smoking, and health status at the first survey being taken into account. The cross-sectional prevalence rates were clearly related to past exposure, but measures of attack or progression were not, despite the fact that exposure ranged from slight to heavy, and attack and progression rates were substantial. The lack of a relationship to exposure contrasted with the demonstrable effects of age and, to a less extent, smoking. (11 Refs)

34. MESOTHELIOMA MORTALITY IN ASBESTOS WORKERS: IMPLICATIONS FOR MODELS OF CARCINOGENESIS AND RISK ASSESSMENT.

Peto J, Seidman H, Selikoff IJ
Imperical Cancer Res. Fund Cancer Epidemiology Unit., Radcliffe Infirmary, Oxford OX2 6HE, England
Br J Cancer; 45(1):124-135 1982

Mesothelioma death rates in asbestos workers appear to be proportional to the 3rd or 4th power of time from first exposure under a wide range of conditions of exposure for both pleural and peritoneal tumors, though the peritoneal:pleural ratio depends on fiber dimension and type. Age at first exposure has little or no influence, however, which supports the 'multi-stage' model of carcinogenesis under which the increase in most cancer incidence rates with age is due to a constant incidence of genetic or epigenetic accidents, rather than to progressive generalized changes in regulatory or immune function. These relationships provide a simple basis for risk assessment, and support the suggestion that mesotheliomas may constitute a high proportion of cancer deaths resulting from early exposure to asbestos. (Author abstract) (24 Refs)

35. MORTALITY PATTERNS OF ROCK AND SLAG MINERAL WOOL PRODUCTION WORKERS: AN EPIDEMIOLOGICAL AND ENVIRONMENTAL STUDY.

Robinson CF, Dement JM, Ness GO, Waxweiler RJ
Div. Surveillance, Hazard Evaluations, and Field Studies, Natl. Inst. Occupational Safety and Health, Center Disease Control, Cincinnati, OH, 45202
Br J Ind Med; 39(1):45-53 1982

An epidemiological and environmental study of rock and slag mineral wool production workers was undertaken at a plant that has been in operation since the early 1900s. Size characteristics of fibers produced by each process at the plant and data from industrial hygiene surveys were used to evaluate current and past exposures. These data suggest that the av historical airborne fiber concentration probably did not exceed 2.5 fibers/cc before 1935 and 1.0 fiber/cc after 1935. A retrospective cohort mortality study was designed to assess mortality patterns. Detailed occupational histories were compiled on all plant employees. All jobs in the plant were assigned to one of eight potential exposure categories to assess the extent and severity of mineral wool exposure and the effect of other significant exposures on employee mortality. Findings included an increase in the number of deaths due to cancer of the digestive system and non-malignant respiratory disease among workers who had over 20 yr exposure to mineral wool or who had survived 20 yr since their first exposure to mineral wool. These findings are not inconsistent with those of Enterline's (Symposium on Biological Effects of Mineral Fibres, Lyon, France, September 1979) in the Thermal Insulation Manufacturers' Association's mortality study of men employed in four mineral wool plants. (Author abstract) (32 Refs)

36. ASSESSMENT OF OCCUPATIONAL EXPOSURE TO ARSENIC, COPPER, AND LEAD IN A WESTERN COPPER SMELTER.

Cant SM, Legendre LA
Div. Industrial Safety and Health, Dept. Labor and Industries, P.O. Box 207, Olympia, WA. 98504
Am Ind Hyg Assoc J; 43(4):223-226 1982

A comprehensive industrial hygiene survey was conducted at a copper smelter that at the time of survey employed approx 850 workers. Sampling results for 272 arsenic time weighted av samples ranged in concentration up to 5310 ug/cubic meter (m3) with an overall mean of 154 ug/m3. The sampling data presented show a wide range of exposure levels overall as well as within individual departments and job categories while varied and large standard deviations demonstrate the difficulty involved in clearly defining a 'normal exposure' within even the same job situation. (6 Refs)

37. LEUKEMIA IN BENZENE WORKERS.

Rinsky RA, Young RJ, Smith AB
Natl. Inst. Occupational Safety and Health Centers for Disease Control, Cincinnati, OH, 45226
Am J Industr Med; 2(3):217-245 1981

A report based upon 98% vital status follow-up of a previously reported cohort mortality study of benzene-exposed workers is presented. Included are all available determinations of environmental benzene concentrations, the risk of leukemia experienced by a cohort of 748 workers exposed for at least 1 day to benzene between 1940 and 1949 (Group 1) and a cohort of 258 workers exposed between 1950 and 1959 (Group 2), leukemia risk in Group 2, and clinical information on all leukemia deaths. Mortality for all causes in Group 1 was only slightly

greater than expected in the referent population of United States white males. Mortality for lymphatic and hematopoietic malignancies, however, showed a large, significant increase over the expected mortality [standardized mortality ratio (SMR) = 330]. Seven deaths were from leukemia (SMR = 560); for workers exposed for greater than 5 yr, the SMR for leukemia was 2,100. All leukemias were myelogenous or monocytic. In Group 2, the overall death rate was lower than expected, probably because of the young age of the workers. One case of leukemia was observed vs 0.46 expected (SMR = 217). The 8-hr time-weighted av benzene exposures of these workers were within recommended standards in effect at the time of exposure. (37 Refs)

38. PREMALIGNANT AND NEOPLASTIC SKIN LESIONS ASSOCIATED WITH OCCUPATIONAL EXPOSURE TO 'TARRY' BYPRODUCTS DURING MANUFACTURE OF 4,4'-BIPYRIDYL.

Bowra GT, Duffield DP, Osborn AJ, Purchase IF
Mond Div., Imperial Chemical Industries Ltd., Cheshire, England
Br J Ind Med; 39(1):76-81 1982

Skin lesions have been identified in 20 workers manufacturing 4,4'-bipyridyl. The lesions were on the face, neck, and backs of the hands and arms. Larger localized lesions were removed surgically and examined histopathologically, but other lesions have been treated topically with fluorouracil cream. Histological diagnosis showed a progression from keratosing to Bowen's disease and, in six cases, to squamous cell carcinoma. Over 550 individuals associated with 4,4'-bipyridyl processes between 1961 and 1980 have been examined or questioned. All 20 patients identified worked in now obsolete production plants, 15 of whom were found among the 147 shift process operators. The time taken for the lesions to appear from first working on a 4,4'-bipyridyl plant was 6-19 yr (av 12 yr). Starting in the early 1960s three processes have been successively used to convert pyridine into 4,4'-bipyridyl. These differ in the reaction conditions used and in the efficiency of the conversion. In the two earlier plants a substantial quantity of pyridine was converted into polypyridyls and 'tarry' byproducts, which caused operating difficulties and increased the risk of worker exposure. The exposure and occupational histories of the cases, including the fact that two had worked only on the obsolete production plants, indicates that the causative agent was present in these earlier processes. In vitro tests for potential carcinogenicity on materials from the present plant and from an earlier process gave positive tests on the tarry byproducts from the earlier process, suggesting that they were the cause of the lesions. Tar impurity production on the present plant is minimal, and worker exposure to chemicals is low. No similar skin lesions have been seen in those who have worked only on the present plant. This observation supports the view that the causative agent was present only on the earlier plants but is not conclusive because of the shorter time that has elapsed since first exposure of personnel who have worked only on the present plant. Medical surveillance of past and present 4,4'-bipyridyl workers is continuing. (Author abstract) (5 Refs)

39. A CLUSTERING OF PROSTATIC CANCER IN AN AREA WITH MANY MANGANESE MINES.

Watanabe H, Mishina T, Ohe H, Araki H, Nakao M
Dept. Urology, Kyoto Prefectural Univ. Medicine, Kyoto 602, Japan
Tohoku J Exp Med; 135(4):441-442 1981

Mass screening for prostatic cancer since November 1977 in a Japanese town (7,774 inhabitants in 1975, with 823 men over 55 yr of age) detected 5 cases (4.0%) of prostatic cancer, 40 (32.0%) of benign prostatic hypertrophy, and 4 (3.2%) of other urological diseases. Two deaths from prostatic cancer occurred previously. The expected number of deaths was two. It is suggested that this excess may be related to the large number of manganese mines in the area. (4 Refs)

40. BIOLOGICAL EFFECTS OF NICKEL-CONTAINING DENTAL ALLOYS.

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US Public Health Service Hosp., 15th Ave. and Lake St., San Francisco, CA, 94118
J Am Dent Assoc; 104(4):501-505 1982

Nickel chromium alloys have been used for 25 yr; with increasing cost of noble metal based alloys, use of base metal alloys has increased significantly, particularly within the years 1979-1980. This increased exposure has prompted retrospective studies of possible carcinogenic risk due to nickel. Carcinogenicity of nickel and nickel compounds has been implicated in epidemiologic studies of workers exposed to nickel in Wales, Canada, Norway, the Soviet Union, Japan, France, Germany and the United States. Workers associated with nickel refining, smelting or electroplating have shown the highest incidence of cancer of the respiratory organs. Studies with rats and mice produced benign and malignant tumors whether nickel subsulfide. was inhaled or injected as nickel subsulfide. Results from animal studies are equivocal. In the general population, 9% of women and 0.9% of men show a positive patch test to nickel. A study of allergic response to nickel-containing dental alloys indicated that 80% of confirmed nickel-sensitive patients also had a positive dermal response to dental nickel-chromium alloy. The current nickel exposure standard, as set by Occupational Safety and Health Administration (OSHA), is an 8 hr time-weighted average concentration of 1,000 g/cubic meter. The National Institute for Occupational Safety and Health (NIOSH) has recommended that the OSHA standard should reduce limits of airborne nickel levels by 80 times. (37 Refs)

41. CYTOGENETIC EFFECTS OF EPOXY, PHENOLFORMALDEHYDE, AND POLYVINYLCHLORIDE RESINS IN MAN.

Suskov II, Sazonova LA
Inst. General Genetics, Acad. Sciences USSR, Moscow 117333, USSR
Mutat Res; 104(1-3):137-140 1982

Cytogenetic effects of synthetic resins were studied in workers exposed to epoxy and polyvinylchloride (PVC) in the manufacture of goods or to phenol and formaldehyde in the production of phenolformaldehyde (PF) resins. Chromosomal aberrations (CA) were analyzed in peripheral lymphocytes from resin workers (av age 39.1 yr, exposure 4 mo-30 yr) and healthy nonexposed controls. Exposure to the synthetic resins and their components was by inhalation and skin exposure. Av concentration of chemical in the air was 6 mg/cubic meter (m3) for vinyl chloride, 1 mg/m3 for epichlorohydrin (a component of epoxy resin), 0.3 mg/m3 for phenol, and 0.5 mg/m3 for formaldehyde. Among controls CA were found in 2.4% of cells; 0.024 aberrant chromosomes (AC)/cell were found; 1.26 breaks/chromosomes were found. The frequency of CA in cells from exposed workers was 5.5% for epoxy resin, 6.1% for PVC, and 5.0% for PF. Significant increases in AC/cell were found for all compounds. A significant increase in chromosomal breaks/cell was found only for PVC. Acentric single and paired chromosomal fragments were the predominant aberration noted, accounting for 90%. Results indicate the need for

further study of the hazards of occupational exposure to synthetic resins and components of the resins. (5 Refs)

42. BODY BURDEN OF POLYCHLORINATED BIPHENYLS AMONG PERSONS EMPLOYED IN CAPACITOR MANUFACTURING.

Wolff MS, Fischbein A, Thornton J, Rice C, Lilis R, Selikoff IJ

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Int Arch Occup Environ Health; 49(3/4):199-208 1982

Polychlorinated biphenyls were assayed in blood plasma and gluteal tissue from the outer gluteal quadrant of 290 and 61 subjects, respectively, who had worked in two factories engaged in manufacture/repair of electrical capacitors. The subjects were (sex, mean age in years, mean total years of employment, mean years at current job): 166 males, 42, 15, 7.7; 160 females, 48, 16, 7.2. The PCBs in use were Aroclor 1016 and Aroclor 1221, ie, mainly dichlorobiphenyl and trichlorobiphenyl In the previous 11 yr Aroclor 1242 and Aroclor 1254 had been used. Before that only 1254 was in use. Correlation of plasma concentration (1-546 ppb) of the more highly chlorinated PCB used in the past, with total duration of employment, suggested accumulation over time. The less highly chlorinated PCBs (di, tri- and tetrachlorobiphenyls), were the source of current exposures of 6-2,530 ppb in plasma. Those in direct contact with PCB (such as filling of capacitors) had higher levels. Adipose concentrations of both the more highly chlorinataed PCBs (1-165 ppm) and lower chlorinated PCBs (0.6-414 ppm), were proportional to levels in plasma. In general, males had higher concentrations of PCBs than females. (14 Refs)

43. ARE DATASCREEN TERMINALS A SOURCE OF INCREASED PCB-CONCENTRATIONS IN THE WORKING ATMOSPHERE?

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Int Arch Occup Environ Health; 49(3/4):193-197 1982

Polychlorinated biphenyls (PCB) were analyzed in air samples taken during working hr in second and third floor offices, without air conditioning, in which 6-13 datascreen terminals were in use. Samples were taken for 2-3 days in the winter. PCB was collected in both the vapor- and particulate phases. Air outside the building was sampled 1,200 meter (m) away at roof level, and 3 m away at the fourth floor level. The inside samples contained 56-81 nanog (ng)/cubic m (m3) PCB, all of the Aroclor 1242 type. The three outside samples contained 0.5-1 ng/m3 of Aroclor type 1242; two samples also contained 0.5 ng/m3 of Aroclor 1254. Instances of periodic facial skin rashes similar to those known due to PCB had occurred in 3 of the 15 operators in the offices in the last year. The symptoms disappeared during vacations and reappeared shortly after return to work. The PCB levels found were below the safety level of 1,000 ng/m3 recommended by NIOSH but were considered high in offices without known use of PCB. While capacitors and/or transformers were thought to be the source of PCB, no information about the electrical components in the datascreen terminals were available. (10 Refs)

44. APPLICATION OF THE SALMONELLA MUTAGENICITY ASSAY AND DETERMINATION OF POLYCYCLIC AROMATIC HYDROCARBONS IN WORKPLACES EXPOSED TO PETROLEUM PITCH AND PETROLEUM COKE.

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Int Arch Occup Environ Health; 49(3/4):223-239 1982

The airborne particulates and the petroleum pitch (PP) and petroleum coke (PC) working materials in a carbon electrode factory were assayed for mutagenicity on Salmonella typhimurium TA98 and TA100 with or without S9 activation. The PP contained antanthrene (AA), benzo(k)fluoranthene (BkF), benzo(a)pyrene (BaP), fluoranthene (FA), and perylene (P); the PC contained BkF, BaP, FA, P, and benzo(b)fluoranthene. There was a dose-response mutagenicity relationship (DRMR) between PP extracts and TA98 with S9. The PC extracts were not mutagenic under any condition due to the low levels of the indicated polycyclic aromatic hydrocarbons. Airborne particulates from two distinct sites in the factory contained BkF, BaP, FA, and P, but not in the same ratios; one site also yielded AA. A DRMR was found for extracts from both sites under all conditions except TA100 without S9 at the site lacking AA. The demonstration of mutagenic activity in the airborne particulates not requiring S9 activation indicated the potential adverse effects of the thermal processing of the PP and PC. (41 Refs)

45. POLYCYCLIC AROMATIC HYDROCARBONS IN THE OCCUPATIONAL ENVIRONMENT: WITH SPECIAL REFERENCE TO BENZO[A]PYRENE MEASUREMENTS IN SWEDISH INDUSTRY.

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Scand J Work Environ Health; 8(1):1-19 1982

Aspects of occupational exposure to polycyclic aromatic hydrocarbons (PAH) are reviewed, with emphasis on benzo[a]pyrene (BAP). PAH are widely distributed in the environment and are associated with industrial processes including coking and combustion of carbonaceous materials. Concentrations of PAH in the air in industrial areas are generally 2-3 orders of magnitude less than concentrations in the workplace. The primary sources of PAH are coal tar and pitch. Exposure occurs through the lungs and skin. Samples of PAH are collected on glass fiber or silver film filters and extracted with solvents. Total PAH may be determined or individual compounds may be analyzed by chromatographic methods. Review of studies conducted in various countries indicates that very high exposure to BAP [greater than 10 ug/cubic meter (m3)] occurs in gas and coke works, aluminum works, manufacture of carbon electrodes, handling of molten tar or pitch, chimney sweeping, and use of asphalt mixed with tar. High exposure occurs in blast furnaces and steel works. Findings of epidemiologic studies are contradictory, but some studies indicate an increased risk of lung, bladder, and skin cancers with exposure to PAH. The current threshold limit for exposure to BAP is 0.2 mg/m3. (88 Refs)

46. OCCUPATIONAL AND ENVIRONMENTAL HEALTH PROBLEMS OF THE DEVELOPING OIL SHALE INDUSTRY: A REVIEW.

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Am J Industr Med; 2(3):247-260 1981

Health and safety problems associated with the oil shale industry are reviewed. Polycyclic aromatic hydrocarbons, which are often carcinogenic, may represent a hazard during the retorting and, possibly, the refining processes. Scottish, Estonian, and American health experiences are reviewed. Studies in those countries have shown that potential hazards of the oil shale industry include skin and lung cancers. A number of studies in rodents have demonstrated neoplastic and other cytologic changes after administration of crude oil shale or its constituents via intratracheal, inhalation, or topical routes. Hydro-treating crude oil shale dramatically reduces its carcinogenic potency when applied topically. Results of other rodent studies in which oil shale materials were applied topically, installed intratracheally, or used as bedding material are reviewed. Future prospects for monitoring the health of oil shale workers are discussed. (46 Refs)

47. A REDUCED CAPACITY FOR UNSCHEDULED DNA SYNTHESIS IN LYMPHOCYTES FROM INDIVIDUALS EXPOSED TO PROPYLENE OXIDE AND ETHYLENE OXIDE.

Pero RW, Bryngelsson T, Widegren B, Hogstedt B, Welinder H

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Mutat Res; 104(1-3):193-200 1982

Inhibition of unscheduled DNA synthesis (UDS) was studied in 23 workers (25-59 yr old, mean age 41 yr) exposed to propylene oxide (PO) as process workers for 1-20 yr (mean 10 yr) and in 5 male workers (25-44 yr old, mean age 32 yr) exposed to ethylene oxide (EO) as sterilizing, packing, or truck-driving personnel for 0.3-5 yr (mean 2.9 yr). Eighteen of 23 PO-exposed workers were smokers. Controls were 12 male workers (21-46 yr old, mean age 30 yr) not exposed occupationally to any mutagenic chemical compound. Five of the controls were smokers. UDS induced by N-acetoxy-2-acetylaminofluorene (NA-AAF) and NA-AAF binding to DNA were the methods used. Use of [3H]NA-AAF enabled the direct assessment of initial NA-AAF damage to DNA, which in turn served as the substrate for induction of UDS, and thereby repair of NA-AAF lesions in the DNA. Lymphocyte samples from both the controls and the PO-exposed workers varied considerably in values for NA-AAF-induced UDS. UDS variation was dependent on the level of NA-AAF bound to DNA after a 30-min incubation of lymphocytes in the presence of 10 uM [3H]NA-AAF. The correlation coefficients between NA-AAF-induced UDS and NA-AAF binding to DNA were highly significant for both the controls and PO-exposed workers. PO-plus EO-exposed workers exhibited significant reductions in NA-AAF-induced UDS when compared to the controls. The level of [3H]NA-AAF covalent binding to DNA was not significantly reduced by PO- and EO-exposure. Results indicate that exposure to relatively low doses of PO and EO can cause individuals to be at increased risk due to a reduced capacity to repair DNA lesions. (12 Refs)

48. MORTALITY OF 2,4-DICHLOROPHENOXYACETIC ACID AND 2,4,5-TRICHLOROPHENOXYACETIC ACID HERBICIDE APPLICATORS IN FINLAND. FIRST REPORT OF AN ONGOING PROSPECTIVE COHORT STUDY.

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Scand J Work Environ Health; 8(1):37-42 1982

Mortality and cancer incidence in a group of 1,926 males occupationally exposed to both 2,4-dichlorophenoxyacetic acid and 2,4,5-trichlorophenoxyacetic acid was followed over a 9-year period. The group consisted of those with 2-7 work weeks exposure (75%) and those with greater than 8 work weeks exposure (25%) prior to the study period and not necessarily in the same year. Further exposure during the study period may have occurred. Initial exposure of two-thirds of the group occurred within 5 years of the start of the study period. The ratio of observed to expected deaths was 62/92.9 in the initial 5-year period and 82/91.1 in the final 4-year period; the corresponding figures for cancers were 9/18.1 and 17/18.4, respectively; and for all natural causes of death, 41/76.7 and 64/78.6. The same undermortality tendencies were seen allowing for 10-and 15-year latency periods. No lymphoma or soft tissue sarcoma deaths occurred in the 10-year latency period. Increased mortality or cancer was not seen in groups with exposure greater than or equal to 6 or 8 weeks in a 5-year period. Smoking habits were not questioned. (20 Refs)

49. CHROMOSOME ABERRATIONS IN LYMPHOCYTES OF WORKERS EXPOSED TO STYRENE.

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Dept. Industrial Hygiene and Toxicology, Inst. Occupational Health, Haartmaninkatu 1, SF-00290 Helsinki, Finland

Am J Industr Med; 2(3):299-304 1981

Literature concerning chromosome damage in persons exposed to styrene is reviewed, and aspects of a previously published paper by Thiess et al are discussed. Despite some negative findings, most studies indicate that exposure to high concentrations of styrene in the industry manufacturing reinforced plastic is associated with an increased frequency of chromosome aberrations in peripheral lymphocytes. Evidence that the damage is caused directly by styrene (and not by other substances combined with styrene) is briefly discussed. (22 Refs)

50. DIFFICULTIES IN THE EARLY DIAGNOSIS OF LIVER DAMAGE DUE TO EXPOSURE TO VINYL CHLORIDE.

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Med Pr; 32(4):277-282 1981

Diagnostic tests were performed in 228 workers exposed occupationally to vinyl chloride (200-1,000 mg/cubic meter) to detect poisoning. Acro-osteolysis was found in 5 cases, vascular disturbances in the extremities in 45. The alanine aminotransferase, aspartic aminotransferase, gamma-glutamyl transpeptidase, alkaline phosphatase, serum cholinesterase, bilirubin and prothrombin levels did not differ significant from those found in 70 unexposed controls. The Bromsulphalein test was positive in 9/50 and moderate hepatomegaly was found in 26/50 exposed workers. (10 Refs) (In POL)

51. EXPOSURE TO XENON 133 IN THE NUCLEAR MEDICINE LABORATORY.

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Nuclear Medicine Lab., Cincinnati General Hosp., Cincinnati, OH, 45267
Radiology; 143(1):243-247 1982

Exposure of nuclear medicine personnel to 133X was examined quantitatively at three area hospitals during ventilation-perfusion studies in which the technologists breathed through a specially made xenon-trapping apparatus. The accumulated mean xenon activity varied a great deal from hospital to hospital, ranging from 52 nCi (1.92 kBq) to over 5 uCi (185 kBq) during a typical 20-min lung study. The observed difference largely depended on the xenon exhaust and trapping systems, which could make a 100-fold difference in exposure rates. The air flow and its exchange rate in the room were additional factors contributing to the different exposure rates. Although the patient continued to be a source of xenon contamination throughout the study, the xenon-trapping system, while operational, could exhaust substantial quantities of xenon. The exhaust duct system, on the other hand, left little contaminated air in the room, resulting in the least exposure to personnel. (Author abstract) (10 Refs)

52. PRECANCEROUS CONDITIONS AND CANCER OF THE STOMACH.

Duris I, Koska M, Zaviacic M, Mikulecky M, Holly D
Katedra internistickych disciplin, I Lekarska fakulta Univerzity Komenskeho, Mickiewiczova 13, 88421 Bratislava, Czechoslovakia
Bratisl Lek Listy; 76(5):540-551 1981

Precancerous conditions and cancer of the stomach were studied in 4,159 patients subjected to gastroscopy. The histological diagnosis was that of gastric polyps in 112 patients, atrophic gastritis with intestinal metaplasia (AGIM) in 190, and gastric cancer in 103, including intramucosal carcinoma in 9. All patients with gastric carcinomas were in the age bracket 20-90 yr, and the frequency was higher among men than among women in all age groups. The incidence of AGIM was higher among women than among men in the age group 40-70 yr, especially in the age group 50-60 yr. Gastric cancer was found to occur at a significantly higher age among agricultural workers than in the other occupational groups. Concurrent disease as risk factor was found in 47% of 42 patients with gastric xanthomas. Gastric stump carcinoma was found in 23% of the patients subjected to gastric resection for gastric or duodenal ulcer. Forty-two parameters were studied in the gastric cancer patients and in patients without this disease by the pattern recognition method. Consumption of garlic, onions, home made smoked meat, as well as persistent emotion of fear were found to be linked most closely with gastric cancer. Restriction of burnt food and consumption of generous amounts of fruits and vegetables appear to be beneficial against gastric cancer. (41 Refs) (In SLO)

53. SKIN CANCER: OCCUPATIONAL CAUSES.

Bickers DR
Dept. Dermatology, Case Western Reserve Univ., Cleveland, OH
Consultant; 22(4):392-393,397,400-401 1982

Occupationally caused skin cancers are discussed, including those related to fossil fuels, arsenic, and physical agents (UV radiation, ionizing radiation). Diagnosis and treatment are summarized. Historical studies of the relationship between skin cancer and occupation are cited; one early report established a relationship between cancer of the scrotum and occupational exposure to soot in chimney sweeps. In a British epidemiologic study, exposure to pitch, tar, or tar products accounted for 59.4% of all cases of skin cancer. The presence of lesions on exposed body areas and employment where workers are repeatedly exposed to carcinogens can definitely lead to occupationally related cancers. (no Refs)

54. A COHORT STUDY ON MORTALITY AMONG LONG-TIME EMPLOYED SWEDISH CHIMNEY SWEEPS.

Hogstedt C, Andersson K, Frenning B, Gustavsson A
Dept. Occupational Medicine, Natl. Board Occupational Safety and Health, S-171 84 Solna, Sweden
Scand J Work Environ Health; 8(Suppl1):72-78 1982

A cohort study was performed on all members of the Swedish Chimney Sweeps Union who were active in 1950 or later and who were members for at least 10 yr. A total of 2,071 sweeps were studied; 2,048 were evaluable. Compared to the national av, the mortality of the exposed cohort was significantly increased (230 observed vs 197.6 expected before the age of 80) due to a greater number of deaths from tumors, particularly lung and esophageal cancer, and from nonmalignant diseases of the respiratory system (chronic bronchitis, emphysema, and asthma). The increased overall mortality was higher among those with shorter exposure time, although esophageal cancer and chronic respiratory diseases were more frequent in long-time exposed individuals. The excess mortality was more predominant among men who left the profession before 1965 than among those who were still working that yr or later. Exposure of chimney sweeps could explain the mortality pattern observed in this study, however, cigarette smoking may have been a contributing factor. Exposure to polycyclic aromatic hydrocarbons, nitrogen compounds, arsenic, and asbestos in combination with promotion from exposure to sulfur dioxide probably caused the increased mortality in these men. (21 Refs)

55. THE CARCINOGENIC EFFECT OF AROMATIC AMINES: AN EPIDEMIOLOGICAL STUDY ON THE ROLE OF O-TOLUIDINE AND 4,4'-METHYLENE BIS(2-METHYLANILINE) IN INDUCING BLADDER CANCER IN MAN.

Rubino GF, Scansetti G, Piolatto G, Pira E
Inst. Occupational Health, Turin Univ., CTO- Via Zuretti, 29-10126 Torino, Italy
Environ Res; 27(2):241-254 1982

Cause-specific mortality of 906 workers first employed 1922-1970 in a dyestuff factory in Northern Italy was compared to national figures; a marked excess of bladder cancer was observed (36 observed vs 1.23 expected deaths). The mean latent period was 25 years. The excess was higher among those with longer duration of exposure. Some excess of mortality from lung cancer, laryngeal cancer, and esophageal cancer was also found, but a clear explanation could not be provided regarding the causal role of aromatic amines. Mortality from bladder cancer was very much higher among those exposed in benzidine and naphthylamines manufacture as compared to those only exposed in use or intermittent contact. Excess bladder cancer was also very high among workers in fuchsin manufacture. There is evidence that O-toluidine and 4,4'-methylene bis(2-methylaniline) should be implicated in such excess mortality. Caution in handling these compounds is therefore suggested and the need for further studies to confirm such findings is stressed. (Author abstract) (19 Refs)

56. OCCUPATIONAL BLADDER CANCER AND CIGARETTE SMOKING IN WEST YORKSHIRE.

Cartwright R
Yorkshire Regional Cancer Organisation, Cookridge Hosp., Leeds LS16 6QB, England
Scand J Work Environ Health; 8(Suppl1):79-82 1982

Results of the preliminary analysis of the first 1,000 cases of bladder cancer pooled from three hospital districts, Huddersfield with both high mortality and morbidity, Bradford with high morbidity and low mortality, and Wakefield with both low morbidity and mortality, are presented. All cases prevalent at the onset of the study in 1978 together with all incident cases occurring since, up to 1980 were included. All prevalent cases were matched with one hospital referent and all incident cases with two. The following information was collected: identification, coffee and alcohol drinking habits, smoking habits, saccharin use, past medical history, past drug treatment, occupational history, hobbies, and family history. Results of the analysis for cigarette smoking showed a statistically significant risk for bladder cancer. The risks associated with the cases that had worked for at least 6 mo in seven risk occupations are summarized. The chemical industry workers included a preponderance of process workers in the dye manufacturing industry. Summary of the risk ratios for contemporaneous smokers and nonsmokers in three occupations is presented. The differences between the pair of risk ratios were statistically significant for dye manufacturers but not for dye users or printers. The age of workers at the beginning of work in the dye manufacturing industry influenced the subsequent risk of developing bladder cancer. The actual length of employment and the date of beginning the work were both important variables. (11 Refs)

57. RESTRICTED COHORT STUDY DESIGNS.

Oakes D, McDonald JC
TUC Centenary Inst. Occupational Health, London Sch. Hygiene and Tropical Medicine, Univ. London, Keppel St. (Gower St.), London WC1E 7HT, England
Scand J Work Environ Health; 8(Suppl1):30-33 1982

Effects of three types of restriction (selection for employment, survival at work, and susceptibility to the effects of exposure) were studied using data from a large cohort of Quebec chrysotile miners and millers comprising all 11,379 persons born between 1891-1920 who had worked for 28 days or more in this industry. Results of the three restricted analyses (deaths from pneumoconiosis, malignant disease of the respiratory and digestive tract among males), preceded by the case-referent analysis of the full cohort, in which there were 4,463 male deaths, are presented. (10 Refs)

58. MORTALITY AND CANCER MORBIDITY AMONG WORKERS IN THE RUBBER TIRE INDUSTRY.

Delzell E, Lewis J, Monson RR
(c/o Monson) Dept. Epidemiology, Harvard Sch. Public Health, 677 Huntington Ave., Boston, MA, 02115
Am J Industr Med; 2(3):209-216 1981

Mortality and cancer incidence were evaluated retrospectively in 1,792 white men employed at a rubber tire plant between 1954 and 1976. The 1,792 workers had accumulated 26,839 person-yr of follow up. Among men employed for 10 yr or more, overall cancer mortality was approx 19% higher than that expected in Connecticut white males, whereas cancer incidence for all sites combined was similar in the two groups. Excesses in deaths and incident cases for cancers of the buccal cavity and pharynx, large intestine, pancreas, and kidney were observed. The workers also showed excesses in deaths from cancers of the digestive organs and peritoneum and incident cases of cancer of the bronchus and lung. No increase in occurrence of stomach or bladder cancer or of leukemia was seen. Limitations of the data are discussed in terms of interpreting the results. As the workers investigated were young (93% total person-yr less than 65 yr old), and because estimates of cancer excesses were conservative in this study, cancer mortality and morbidity should continue to be monitored in the rubber industry. (15 Refs)

59. WARTS AMONG WORKERS IN POULTRY SLAUGHTERHOUSES.

Mergler D, Vezina N, Beauvais A
Departement des sciences biologiques, Universite du Quebec a Montreal, CP 8888, Montreal, Quebec, H3C 3P8, Canada
Scand J Work Environ Health; 8(Suppl1):180-184 1982

The prevalence of warts among workers in Quebec poultry slaughterhouses was studied and some of the specific factors present in the work environment that would lead to the propagation and development of the Papilloma virus were determined. A limited-choice questionnaire was used to identify the health problems, and to determine the possible relationships between health problems and specific factors in the workplace. Five hundred and sixty-nine of the 1,194 workers (47.6%) completed the questionnaire. The prevalence of warts was 28.5%. Results indicate that certain conditions present in the poultry slaughterhouse environment favor the propagation and/or development of the Papilloma virus. (34 Refs)

60. A VALIDATION OF QUESTIONNAIRE INFORMATION ON OCCUPATIONAL EXPOSURE AND SMOKING.

Pershagen G, Axelson O
Natl. Inst. Environmental Medicine, Box 60 208, S-104 01 Stockholm, Sweden
Scand J Work Environ Health; 8(1):24-28 1982

Occupational exposure information obtained via a questionnaire to close relatives of 160 deceased men in the vicinity of a smelter was compared to data from employee registers. Parents, wives, and children of the men were questioned regarding the deceased's smoking habits and employment history at the smelter. Thirty-two of the deceased had died of primary tumors of the bronchus, lung, mediastinum, pleura, or trachea. There were four age-matched referents for each of the 32 subjects who had not died from these causes. The interviewer did not know the subject- or referent-relatedness of the interviewee. Smelter records confirmed employment of 58/59 men indicated by questionnaire to have worked at the smelter, and that 100/101 indicated not to have worked there had not. Smelter records on smoking habits were only available for 14 individuals; these were in 100% agreement with data from the questionnaire. With respect to arsenic exposure, the sensitivity was only 46% (11/24) when workers with high exposure were determined from information in the questionnaire, while the specificity was 91% (21/23 workers who were not included in the two highest exposure categories in the smelter records were not considered to have been heavily exposed by close relatives). These findings confirm that questionnaires may be of some use in assessment of exposure in occupational health epidemiology. (18 Refs)

61. CANCER MORBIDITY AMONG WOODWORKERS IN THE U.S. AUTOMOTIVE INDUSTRY.

Swanson GM, Belle SH
Dept. Social Oncology, Michigan Cancer Foundation, 110 East Warren, Detroit, MI, 48201
JOM; 24(4):315-319 1982

In October 1979, concern was expressed about suspected excess cancer among woodworkers in several automobile manufacturing plants of the major automobile corporations located in Detroit. Cancer incidence rates for this group were compared with corresponding data for white males in the Detroit metropolitan area. Determination of standardized morbidity ratios (SMRs) showed significant increases for all types of cancer combined and for colorectal and salivary gland cancer in the study group. Further investigation is required to determine whether occupational exposure is responsible for these increases or if some other etiological mechanism is operating. (Author abstract) (38 Refs)

62. WOOD DUSTS: HEALTH HAZARDS AND SURVEILLANCE OF WOODWORKERS' HEALTH.

Goulet L, Lebel P
Deptartement de Sante communautaire, Hopital Sacre-Coeur, 5400 boulevard Gouin ouest, Montreal, H4J 1C5, Canada
Union Med Can; 110(10):865-868,870 1981

Toxic effects of wood dust include dermatitis, conjunctivitis, respiratory disorders, irritation of the respiratory tract, rhinitis, allergic asthma, allergic alveolitis, systemic disorders, and cancer. Intrinsic (alkaloids, saponins, phenols, stilbenes) and extrinsic (plants and microorganisms) wood toxins are described. In Great Britain, the high correlation between ethmoid neoplasms (EN) and wood-working has resulted in the classification of EN as a occupational disease. Sinus tumors account for only 3% of head and neck cancers; of the 3%, only 10% of the cancers involve the ethmoid sinus. In woodworkers, the most common EN is adenocarcinoma. Symptoms of EN, which often appear late in the disease process, include epistaxis, nasal obstruction, and purulent rhinorrhea. Adenopathies are observed in 15-16% of EN patients. Rhinoscopy, radiology, and tomography may be used in the diagnosis of EN. Radiotherapy and/or surgery are recommended for the treatment of EN. Tannic acid and metabolites of molds and fungi are implicated in the etiology of EN in woodworkers. A mean period of exposure of 15 yr to wood dust is considered to be a risk factor for EN. The incidence of EN among woodworkers in Quebec is discussed. Other cancers that have been related to wood dust include digestive system, lymphatic, hemopoietic, and other respiratory tract cancers. Medical and work environment surveillance technics to protect woodworkers are described. (31 Refs) (In FRE)

63. CONCERNING THE PATHOLOGY OF WOOD-WORKERS IN LORRAINE.

Petiet G, Beaulieu L, Poncin JM, Remy JP, Perrin C, De Ren G
No affiliation given
Arch Mal Prof Med Trav Secur Soc; 42(6):311-316 1981

Asthma and ethmoid tumors (ET) among wood-workers are described. Of 25 observed ET, 9 (6 adenocarcinomas, 2 squamous cell carcinomas, 1 carcinoma) occurred in wood-workers (mean age 58 yr). Presenting symptoms (unilateral nasal obstruction, epistaxis), diagnosis (rhinoscopy, radiography, tomography), prognosis, etiology, work history are discussed in relation to EA among wood-workers. (13 Refs) (In FRE)

64. ADENOCARCINOMAS OF THE ETHMOID.

Brugere J, Laurent M, Thanh P, Brunin F, Bataini P
Service de chirurgie cervico-faciale, Institut Curie, 26, rue d'Ulm, Paris Cedex 05, France
Arch Mal Prof Med Trav Secur Soc; 42(6):305-307 1981

Ethmoid adenocarcinomas (EA) observed in 53 patients (48 men, 5 women) are described with particular reference to cases of 35/53 patients who were carpenters or cabinet-makers. Case histories were relatively complete for 33/35 of the patients. At the time of diagnosis of EA, 22/33 of the patients were working in the wood industry; 11/33 had stopped such work 2-41 yr previously. The av duration of exposure for the two groups was 36 and 34 yr, respectively. EA was diagnosed in patients in the two groups at 54 and 68, yr respectively. EA in women is rare. Of the five women with EA, one was a factory worker, one was a business person with no known pathogenic exposure, one was occasionally involved in carpentry, and two had unknown occupations. Factors related to the incidence of respiratory tract cancers, smoking and alcohol intake, were examined in relation to EA. Of the wood-workers, 74% reported drinking less than 1 liter of wine daily. Twenty-four percent of them were non-smokers, while 28%, 24%, and 26% smoked 1.9, 10.19, and 20 or more g tobacco/day, respectively. Thus, EA seem to be independent of of smoking and alcohol intake. Of the 53 EA, 48 were typical adenocarcinomas. Difficulties in microscopic diagnosis EA are discussed. (9 Refs) (In FRE)

65. WOOD-WORKING: OCCUPATIONAL HAZARDS AND PREVENTION.

Catilina P
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Arch Mal Prof Med Trav Secur Soc; 42(5):253-285 1981

Occupational injuries and diseases, including ethmoid malignancies, related to wood-working are discussed. Topics considered include the following: nature and indicators of risk in agricultural, industrial, and commercial areas of wood-working; osteoarticular, neurovascular and skin manifestations of woodworkers; and occupational risks associated with the use of wood preservatives. Malignant disorders of the nasal fossa are described. The number of nasal fossa adenocarcinomas is related to the concentration of tannin used. The anatomopathology of the ethmoid and ethmoid tumors discussed with regard to the relationship of the ethmoid to the face and the nasal fossa, histology, physiology, and histopathology. Adenocarcinomas are the most common ethmoid tumors although squamous cell carcinomas and undifferentiated carcinomas also are observed. Classic etiological factors, clinical and presenting symptoms, diagnosis, treatment, and prognosis of patients with ethmoid tumors are described. Surgery is the treatment of choice although radiotherapy and chemotherapy also may be used. The role of medicine and technology in the prevention of ethmoid cancers in wood-workers is discussed. (148 Refs) (In FRE)

66. CANCER OF THE ETHMOID IN WOOD-WORKERS.

Cabal C, Teyssier JM
No affiliation given
Arch Mal Prof Med Trav Secur Soc; 42(6):303-305 1981

Ethmoid adenocarcinomas (EA) were diagnosed in five men (41-69 yr old) who had been employed in the wood-working industry for varying lengths of time. Working conditions for all five men had been poor with little ventilation. Two men reported not wearing masks. Presenting symptoms included purulent nasal discharge, nasal obstruction, rhinorrhea, headaches, and epistaxis. Patient histories included respiratory allergies (1

patient), recurrent polyps (1), and nasal discharge (2). Differential diagnosis of the EA is described. Treatment of EA included surgery and/or radiotherapy. Recurrences were observed in 3/5 patients. Two of the five patients remained well following therapy. The importance of EA, its incidence in wood-workers, and its status as an occupational disease are discussed. Prevention of EA among wood-workers, including periodic examinations and the determination of those with a predisposition for EA, is considered. (no Refs) (In FRE)

67. LUNG CANCER AMONG NAVAJO URANIUM MINERS.

Gottlieb LS, Husen LA
2-116 East Cliff Drive, Santa Cruz, CA, 95062
Chest; 81(4):449-452 1982

The contribution of smoking habits and uranium mining experience to the lung cancer origin in 16 adult male Navajo patients was assessed. The mean age of death of the 15 deceased miners was 46.1 yr (range 31-70 yr); the 16th miner was alive at 52 yr. The mean length of time of exposure in the mines was 11.9 yr (range 0.5-23 yr). The mean induction-latent period was 15 yr (range 5-30 yr). Ten of the miners had small cell undifferentiated cancer and three had epidermoid type. Fourteen miners were nonsmokers and two were light to moderate smokers. Survival time of the deceased nonsmokers was 1 day to 24 mo, and for the smokers 5-9 mo. There was no correlation between induction-latent period and either time in mines or cumulative exposure to irradiation (CER). The mean CER was 1,139.5 working level mo (range 58.8-2,125). Cigarette smoking is assessed a promoting role in acquisition of lung cancer by uranium miners as two of the three miners with latency periods less than 11 yr were smokers. Radiation was the major cancer initiating agent in these patients. (19 Refs)

OCCUPATIONAL FACTORS: GENERAL

68. THE UTILITY OF REGIONAL CANCER MORTALITY DATA FOR IDENTIFYING OCCUPATIONS AT HIGH RISK.

Kraus JF, Franti CE, Newman B
Sch. Public Health, Div. Epidemiology, Southern Occupational Health Center, Univ. California, Room 76-078, Los Angeles, CA, 90024
Scand J Work Environ Health; 8(Suppl1):65-71 1982

Relation of the excess in cancer death (CD) rates in Sacramento County with specific occupations was investigated and the utility of census data for such analysis is discussed. The analysis of CD by occupation was limited to white males, usual residents of Sacramento County (RSC). The CD certificates examined were restricted to persons whose age at death was from 40-64 yr. During the 1969-1977 period, 1,997 CD among male RSC were observed. The observed and expected numbers of CD and the standardized mortality ratio (SMR) for each of the occupational groups are presented. Technicians, construction craftsmen and cabinet makers, metal craftsmen, and nonfarm laborers showed SMR greater than 140. SMR of less than 70 was found for lawyers, physicians, scientists, teachers, social and religious workers, and sales clerks. Construction craftsmen and drivers exhibited excessive SMR in older age group (55-64 yr old). Low SMR were found for teachers, social/religious workers, and sales clerks in both age groups and for young lawyers, physicians, and scientists. SMR for greater than 140 by occupational category and cancer site is presented. The SMR for metal craftsmen and engineers were excessive for cancer of the esophagus and CNS. Construction workers and drivers had high SMR for cancer of the esophagus and skin. Technicians showed a high SMR for cancer of the bowel and CNS. Several occupational categories showed low SMR for cancer of the lung, including teachers, social/religious workers, writers, artists, architects, clerical workers, station engineers, mechanics, foremen, operatives, farmers, police, fire, and safety officers. Clerical workers and operatives had low SMR for leukemia and lymphoma. (9 Refs)

69. CARCINOGENESIS: PROBLEMS AND PARADOXES. THE 1981 GEORGE H. GEHRMANN LECTURE.

Kotin P
4505 South Yosemite, 339, Denver, CO, 80237
JOM; 24(4):290-294 1982

Carcinogenesis is discussed in relation to carcinogens in the workplace and their regulation. Data on carcinogens remains highly controversial; little progress has been achieved in the application of such data. Research must be evaluated in terms of protocol design and implementation, who performed it, and where it was performed. Dilemmas in answering basic questions are described, using controversies surrounding asbestos as an example. The gaps between information and knowledge and between technology and comprehension are considered. Cultural, political, and economic factors affect the way information is interpreted and may result in certain compromises regarding carcinogens. Public recognition of risk has been associated with a person's sense of control over the hazard, the appearance of the hazard as a single event or as individual events scattered over time and space, and the familiarity of the risk. Technics to determine risk are discussed. Action with regard to carcinogens should include the determination of a true estimate of the magnitude of the problem, examination of workers' compensation, review of differences between large and small companies and respective regulation, education of workers about the material they work with and why certain work practices are necessary, and education of the public. Recommendations for resolving problems surrounding carcinogens are presented. (10 Refs)

70. OCCUPATIONAL RISK FOR LARYNGEAL CANCER.

Flanders WD, Rothman KJ
(c/o Rothman) Dept. Epidemiology, Harvard Sch. Public Health, 677 Huntington Ave., Boston, MA, 02115
Am J Public Health; 72(4):369-372 1982

In a case-control analysis, we studied the effects of type of employment on laryngeal cancer risk using the interview data from the Third National Cancer Survey. Effects were measured relative to the risk for those employed in a group of arbitrarily defined industries and occupations with low risk. We excluded females and controlled for age, tobacco use, alcohol use, and race in the analysis. We found ratio estimates above 3.0 for workers in the railroad industry and the lumber industry; and for sheetmetal workers, grinding wheel operators, and automobile mechanics. (Author abstract) (14 Refs)

71. PATHOLOGY AND PATHOGENESIS OF DISEASES OF THE PANCREAS.

Longnecker DS
Dept. Pathology, Dartmouth Medical Sch., Hanover, NH
Am J Pathol; 107(1):99-121 1982

Pathology and pathogenesis of acute and chronic pancreatitis, carcinoma of the pancreas, cystic fibrosis, and diabetes mellitus are discussed. Islet cell tumors are described, several other less common disorders of the pancreas are listed, and the approaches used in laboratory diagnosis of pancreatic diseases are considered. Pancreatic carcinoma (PC) may arise from duct cells, acinar cells, or islet cells. PC usually involves neoplasms arising in the exocrine pancreas, whereas neoplasms arising in the endocrine pancreas are collectively termed islet cell tumors (ICT). PC is usually diagnosed after local invasion or metastasis has occurred, so that cure by surgical resection is infrequent. The most common histologic type of human PC is a moderately differentiated ductlike adenocarcinoma, which typically incites a desmoplastic reaction. Histologic types of human nonendocrine PC are presented. The incidence of PC rises with age and is greater in males than females (1.6:1 ratio). Epidemiologic studies have demonstrated an increased incidence in individuals with occupational exposure to certain chemicals, and cigarette smoking has been cited as a risk factor for PC. ICT may arise in any of the cell types, and may secrete hormones or may be nonfunctional. Hormone secretion by a tumor may cause a clinical syndrome reflecting the effect of excess hormone. Some nonfunctional ICT are malignant, and their clinical impact results from common duct obstruction or invasion and metastasis. ICT may be present with other endocrine tumors in the multiple endocrine neoplasia I syndrome. (44 Refs)

EPIDEMIOLOGICAL FINDINGS INVOLVING SPECIFIC AREAS

72. CANCER EPIDEMIOLOGY IN CHINA: TWO YEARS OF PROGRESS.

Miller RW
Clincal Epidemiology Branch, NCI, Bethesda, MD
Cancer Research in the People's Republic of China and the United States of America: Epidemiology, Causation and New Approaches to Therapy, Proceedings of a Conference held in New York, 28-29, March, 1980. Marks PA, ed. New York, Grune and Stratton, 273 pp., 1981.

Maps of cancer (CA) mortality in China, ethnic comparison, the Shanghai tumor registry, and CA in domestic animals in China are reviewed. The greatest advance has been in making maps of CA mortality by county. A study revealed that approx 700,000 deaths/yr were due to CA. Ethnic comparison showed that Kazak people have very high rates of CA mortality in general, in particular for esophageal CA. The Uighurs, who live close to the Kazaks, have low rates of CA mortality. The Shanghai tumor registry covers the entire city; data show that CA of the prostate and Ewing's sarcoma of bone are rare, whereas stomach CA is the most frequent form of neoplasia. Gullet CA in chickens and nasal and nasopharyngeal CA in pigs have been studied. (9 Refs)

73. NATIONAL SURVEY OF CANCER MORTALITY IN CHINA.

Ping L, Yao LJ
Cancer Inst., Chinese Acad. Medical Sciences, Beijing, People's Republic of China
Cancer Research in the People's Republic of China and the United States of America: Epidemiology, Causation and New Approaches to Therapy, Proceedings of a Conference held in New York, 28-29, March, 1980. Marks PA, ed. New York, Grune and Stratton, 273 pp., 1981.

Findings of the patterns and distribution of cancer (CA) in China are reported. Between 1975-1978, a survey on the causes of death in China was conducted. Data relating to the total number of CA deaths among the population on a sample basis in 29 provinces, municipalities, and autonomous regions with a population of 850 million is considered. Major causes of death in China, threat of malignant diseases, distribution of CA in the population, geographic distribution of CA, and distribution of regions with high CA mortality rates are discussed. Thirteen provinces in China exist in which the CA mortality rate (age-adjusted to the world standard population) exceeds 100/100,000. (no Refs)

74. EPIDEMIOLOGY OF CARCINOMA OF THE COLON AND RECTUM IN IRELAND: MORTALITY ANALYSIS.

Habba SF, Daly L, Doyle JS
St. Laurence's Hosp., Dublin 7, Ireland
Ir J Med Sci; 151(1):6-11 1982

Mortality patterns of cancer of the colon and rectum in Ireland are compared with those of the rest of the world and with respect to age, sex, and geographical distribution within Ireland. Mortality data from the reports on vital statistics (1950-1976) and unpublished data from the Central Statistic Office were used for calculations. International comparisons are based on World Health Organization publications. Time trends were calculated using the indirect method of standardization with 1975 age and sex specific rates chosen as standard, and a standardized mortality ratio was calculated for each year from 1950-1976 using the population figures obtained from the latest census. Geographic variation analysis was based on the combined mortality data from 1973-1975. Even after standardization, Ireland maintains its position with the highest incidence of mortality from malignant neoplasms of the intestine excluding the rectum in males and the second highest in females. The study confirms the continual rise in mortality from cancer of the colon (excluding rectum) in contrast with the trends in England and Wales; the need for early detection of these carcinomas is stressed. (7 Refs)

75. THE AGE-MORTALITY CURVE OF ENDEMIC PLEURAL MESOTHELIOMA IN KARAIN, CENTRAL TURKEY.

Saracci R, Simonato L, Baris Y, Artvinli M, Skidmore J
International Agency for Res. on Cancer, Lyon, France
Br J Cancer; 45(1):147-149 1982

The age-mortality relationship of pleural mesothelioma observed under endemic conditions in Karain, a small village in Central Turkey, was analyzed. Fatal cases of pleural mesothelioma from 1970-1978 were studied. Twenty-four cases (14 males, 10 females) seen between 1970 and 1974 for which no histopathological confirmation was available, and 26 cases (14 males, 12 females) seen between 1975 and 1978 with histopathological confirmation in 19, were reviewed. Observed vs expected deaths from pleural mesothelioma were tabulated by

age (20-69 yr) and sex. The exponent of age provided the best fit to the observed mortality rates of 1.86 for males, 3.07 for females, and 2.39 for both sexes combined. Pertaining to the general population of Karain which has a uniquely high occurrence of pleural mesothelioma, the mesothelioma pathogenic process apparently follows the same sequence of cellular steps regardless of circumstances; however, the type and intensity of carcinogenic exposure determines the rates at which such steps occur, and in situations in which no occupational exposure to asbestos or other agent is recognized, the same mesothelioma-induction process begins at or soon after birth. (7 Refs)

76. FINAL CASE REPORTING FROM THE UGANDAN PROSPECTIVE STUDY OF THE RELATIONSHIP BETWEEN EBV AND BURKITT'S LYMPHOMA.

Geser A, DeThe G, Lenoir G, Day NE, Williams EH

International Agency Res. Cancer, 150 Cours Albert Thomas, 69372 Lyon, France

Int J Cancer; 29(4):397-400 1982

A prospective epidemiological study was carried out in the West Nile District of Uganda from 1972 to 1979 in order to investigate the etiological role of the Epstein-Barr virus (EBV) in Burkitt's lymphoma (BL). By 1976, 14 BL cases had been detected among the 42,000 children originally bled in the study area. Testing of sera from BL candidates and neighborhood controls showed that children who develop BL later have EBV/VCA titers several dilutions higher than their age- and sex-matched neighbors. This appearance of a strong EBV activity long before BL development was taken as evidence of a causal role of EBV in BL in order to add to the unique material of pre-bled BL cases, BL detection was continued up to March 1979 when field work became impossible in Uganda. Two additional pre-bled BL cases were found during this extension of the study. The serological and virological evaluation of these additional cases showed that the EBV/VCA titers, but not the EA and EBNA titers, were about two dilutions higher in the BL candidates than in the controls. Hybridization assays showed that both lymphomas contained EBV/DNA in the tumor cells. These additional results thus confirm the findings in the first 14 cases and strengthen the epidemiological evidence for a causal role of the EBV in endemic BL. (Author abstract) (10 Refs)

77. EPIDEMIOLOGIC ASPECTS OF MALIGNANT MELANOMA IN URUGUAY: REVIEW OF 154 CASES.

Espasandin J, De Stefani E, Vasallo A, Deneo H, Coppola de Villar J, Furtado A, Vignale RA

Francisco Araucho 1162/302, Montevideo, Uruguay

Arch Argent Dermatol; 31(6):363-370 1981

Mortality due to malignant melanoma (MM) was 0.79/100,000 in Uruguay in 1975. The lesions were located on the legs in 31.2% of the affected subjects, the head and neck in 30.5%, the trunk in 24%, and the arms in 14.3%. The trunk was the predominant location in the men (38.0%); the legs, in the women (38.6%), followed by the head and neck (34.9%). The role of etiological factors in carcinogenesis of MM was discussed. Pigmentation, geographical location, climate, exposure to sun in Uruguay compared with that in Australia (South Wales in Australia has a similar latitute, but a different climate), and incidence of the MM were considered. (22 Refs) (In SPA)

78. GEOGRAPHIC PATTERNS OF CANCER IN THE UNITED STATES.

Blot WJ, Fraumeni JF

Environmental Epidemiology Branch, NCI, Bethesda, MD

Cancer Research in the People's Republic of China and the United States of America: Epidemiology, Causation and New Approaches to Therapy, Proceedings of a Conference held in New York, 28-29, March, 1980. Marks PA, ed. New York, Grune and Stratton, 273 pp., 1981.

Epidemiologic studies that have utilized routinely collected mortality data to generate cancer (CA) statistics at the county level are reviewed. A step-wise approach has been applied. Using mortality data for 1950-1969, adjusted rates have been calculated by sex and race for 35 CAs for each of the 3,056 counties of the United States (US), and distribution of the rates is plotted in a series of computer-generated maps. The county CA rates have been correlated with demographic industrial and environmental data available at the county level. Field studies in various parts of the US with elevated mortality rates have been conducted: CA cases and controls were compared to identify the environmental exposure responsible for high CA rates in a given area. (21 Refs)

79. EPIDEMIOLOGY OF GASTRIC CARCINOMA AND GASTRIC REPLACEMENT IN U.S.A..

Longmire WP

Dept. of Surgery, Univ. California Sch. Medicine, Los Angeles, CA, 90024

Med Welt; 33(7):248-253 1982

Epidemiological data show a considerable decrease in the incidence of gastric carcinoma in United States (US) during the past 50 yr, which is probably the result of reduced dietary nitrate exposure. Roux-en-Y esophagojejunostomy is the method used most commonly in US to reconstruct passage following gastrectomy for gastric cancer. (21 Refs) (In GER)

80. HISTOLOGIC TYPING OF LUNG CANCER IN LOUISIANA.

Rothschild H, Buechner H, Welsh R, Vial LJ, Weinberg R

Dept. Medicine, Louisiana State Univ. Medical Center, New Orleans, LA, 70112

Cancer; 49(9):1874-1877 1982

To determine whether histologic patterns differed in the high- and low-lung cancer mortality parishes (counties) of Louisiana and whether the findings in the state differed from those in other parts of the United States, we studied the available histopathologic materials for 272 persons of the 815 who died of lung cancer in 10 southern, nonurban Louisiana parishes during a 7-yr period from 1971-1977. Squamous-cell carcinoma and small-cell anaplastic carcinoma were the most common tumor types, closely followed in frequency by by adenocarcinoma, confirming reports by other investigators of a change during the past decade in the prevalence of various histopathologic types of lung cancer. The distribution of histopathologic types was not different for high- and low-mortality parishes but differed significantly from the other areas of the US. Three persons had diagnoses consistent with pleural mesothelioma. Occupational histories obtained from relatives showed that one of those persons was a homemaker and the other two were sugarcane farmers with no discernable exposure to asbestos. (Author abstract) (10 Refs)

81. EPIDEMIOLOGY OF UROLOGICAL TUMORS.

Winz R
Urologische Abteilung, Krankenhaus der Missionsschwestern, Burgwall 64, 4400 Munster-Hiltrup, W. Germany
Therapiewoche; 32(5):439-440,443 1982

Statistical analysis of mortality resulting from urological tumors in West Germany for a 10-yr period indicates that rates are increasing for all tumor types. Among tumors affecting both sexes bladder tumors were the most common (41,826 deaths), followed by renal tumors (29,836 deaths). An increase in testicular tumors was interrupted by a 2-yr decline; the peak mortality has shifted from the 25-30-yr to the 35-40-yr age group. Carcinoma of the prostate was the most frequent urological tumor (67,049 deaths). (no Refs) (In GER)

82. ADULT T-CELL LYMPHOMA-LEUKAEMIA IN BLACKS FROM THE WEST INDIES.

Catovsky D, Rose M, Goolden AW, White JM, Bourikas G, Brownell AI, Blattner WA, Greaves MF, Galton DA, McCluskey DR, Lampert I, Ireland R, Bridges JM, Gallo RC
Medical Res. Council Leukaemia Unit, Royal Postgraduate Medical Sch., London, England
Lancet; 1(8273):639-642 1982

Six Black patients (5 born in the West Indies and 1 in Guyana), aged 21-55 yr, had adult T-cell lymphoma-leukemia diagnosed in the UK. This disorder is rare in Europe and the USA, but is more common in Japan. Five patients had severe hypercalcemia which correlated with disease activity, although osteolytic lesions were found in only one. Other clinical features were lymphadenopathy and a high white blood-cell count (range 27-67 x 10(9)/l) with a predominance of pleomorphic lymphoid cells with pronounced nuclear irregularities prominent at ultrastructural level. The cells in all cases formed rosettes with sheep red blood-cells and lacked terminal transferase. Analysis with OKT monoclonal antibodies in four cases confirmed a mature T-cell phenotype defined as helper/inducer (T4+, T6-, T8-) in three. Combination chemotherapy resulted in short-lived remissions; four patients died and two have survived 3-6 mo. The disease in these patients is indistinguishable on clinical and pathological grounds from adult T-cell leukemia/lymphoma in Japan. Geographical clustering among certain racial groups suggests common etiological factors in the pathogenesis of this disease. The finding of high titer antibody against the structural core protein (p24) of a new human C-type leukemia virus (human T-cell leukemia/lymphoma virus) in all tested cases from this series and data from all but one case from Japan suggest that one such factor may be viral. (Author abstract) (no Refs)

83. FLUORIDATION AND CANCER: AN EPIDEMIOLOGIC APPRAISAL.

Neuberger JS
Dept. Community Health, Univ. Kansas Sch. Medicine-Kansas City, Kansas City, KS
J Kans Med Soc; 83(3):134-139 1982

The relationship of water fluoridation to cancer has been studied extensively, perhaps more intensively than many other chemicals in the environment. In 1977, a paper was published under the auspices of the National Health Foundation (NHF), showing a greater increase in the cancer death rates (1940-1970) in the 10 largest American cities that began fluoridation before 1960, as compared to the 10 largest cities not fluoridated as of 1969 (excluding New York City and Detroit). The studies done by the NHF have provided the anti-fluoridationists' greatest arguments against water fluoridation. However, these studies did not meet even minimally acceptable standards for generally accepted epidemiologic research. Other studies by other scientific investigators (including several by the National Cancer Institute) indicate that fluoride is not even associated with cancer, still less a causative factor. The age-adjusted mortality rates in white Kansas residents (both sexes) for 1973-1977 were studied for cancer sites that might possibly be related to water borne carcinogens (stomach, colon, rectum, liver, pancreas, kidney, bladder, and bone), in fluoridated and non-fluoridated Kansas counties of the highest populations. (Wichita, the largest city in Kansas, is not fluoridated). The data were analyzed in terms of person-yr of exposure to fluoride. No association of artificial water fluoridation with cancer was found. It is concluded that current evidence does not support the contention that fluoride is associated with cancer. (9 Refs)

84. OVERVIEW: CANCER RESEARCH.

Marks PA
Columbia Univ. Coll. Physicians and Surgeons, New York City, NY, 10032
Cancer Research in the People's Republic of China and the United States of America: Epidemiology, Causation and New Approaches to Therapy, Proceedings of a Conference held in New York, 28-29, March, 1980. Marks PA, ed. New York, Grune and Stratton, 273 pp., 1981.

Epidemiology of cancer (CA), studies on migrant populations, CA and aging, time course of development of CA, genetic factors involved in CA, viruses and CA, therapy, mechanism of carcinogenesis, and CA detection are reviewed. Age-adjusted death rates for various CA observed among male Japanese in Japan, male Japanese immigrants to California, and the immigrants' sons born in California are presented. Results are expressed as the ratio of the number of deaths divided by the number that would have been expected in a similar group of California whites. Overall age-adjusted incidence for all forms of CA among four groups in Israel compared to the incidence in the United States, during the period 1961-1965, is presented. (30 Refs)

OTHER EPIDEMIOLOGICAL FINDINGS

85. EPIDEMIOLOGIC CHARACTERISTICS OF CHILDHOOD CANCER.

Austin DF, Nelson VE, Johnson LF
Resource for Cancer Epidemiology, Health Services, 1450 Broadway, Oakland, CA, 94612
Front Radiat Ther Oncol; 16:9-17 1982

In the San Francisco metropolitan area, the incidence of malignancies in childhood (0-19 yr old) remained substantially unchanged over a 10-yr period (1969-1978), but the mortality rate declined substantially in all pediatric age groups. The mortality/incidence ratio in all age groups combined declined by about 20% during this time, apparently reflecting improved treatment procedures. These changes have been greater in children 0-14 yr old than in the 15-19 age group. Examination of mean annual age-specific mortality rates for the leukemias suggests that leukemias (especially acute leukemias) of childhood and adulthood may be etiologically different diseases. Their responses to treatment suggest that they may be biologically different diseases. Possible etiologic factors for childhood leukemia include prenatal radiation exposure, chromosomal abnormalities, and possibly antigenic stimulation of the WBC population at a critical period of gestation by certain biologic agents.

The children of women who had been in the first trimester of pregnancy during an influenza A epidemic showed a 3-4-fold increase in the risk of childhood leukemia. Investigations of childhood leukemia clusters have almost uniformly been inconclusive. A cluster of Ewing's sarcoma (30 recorded cases over an 8-yr period; 20% of the entire 8-yr incidence) has been discovered in one small community (within a 30-block diameter) in the San Francisco area. It is hoped that investigations of such clusters may provide clues for the prevention of the disease. (6 Refs)

86. EPIDEMIOLOGY OF BENIGN PROSTATIC HYPERTROPHY BY MATCHED PAIR ANALYSIS.

Araki H
Dept. Urology, Kyoto Prefectural Univ. Medicine, Kyoto, Japan
Nippon Hinyokika Gakkai Zasshi; 72(11):1477-1491 1981

Characteristics of patients with benign prostatic hypertrophy (BPH) were determined in a matched pair analysis of 100 patients with BPH and 100 controls. Statistically significant epidemiological characteristics of patients with BPH included (1) not working in agricultural forestry or fishing, (2) not being exposed to environmental pollution at work, (3) having the first wet dream before age 20, (4) spending at least 10 min when having sexual intercourse one time, (5) no history of having impotence for greater than 1 mo, and (6) no family history of breast cancer or personal history of gastric ulcers. Incidence of BPH was not related to family history of uterine cancer, prostatic cancer, ovarian cancer, or other cancer besides breast cancer. (29 Refs) (In JPN)

VIRAL FACTORS INVOLVING ENVIRONMENTAL AND OCCUPATIONAL EXPOSURE

87. EPIDEMIOLOGIC ASPECTS OF GENITAL HERPES INFECTION.

Fari A, Pelisse M, Trevoux R, Verges J, Gorins A, Peretz M
Laboratorie de la Scala, 137, rue de Vaugirard, F 75015 Paris, France
Gynecologie; 32(4/5):441-445 1981

Of 101 cases of genital herpes simplex virus (GHSV), 85 were Type II and 16 were Type I. The site most often affected was the vulva (84), followed by the cervix (60) and the anus or perianal region (24). Women under 30 yr old were more often affected (58%) than older women. In 19 patients GHSV was the only transmitted disease (STD). In 39 patients, GHSV was associated with one other STD, and in 35 patients, GHSV was associated with two other STD. In eight patients, GHSV was associated with more than two other STD. In 19/56 patients, the herpes virus was able to be isolated from the initial genital lesion more than 2 wk after the onset of the acute episode. In 54 cases where sexual partners were able to be examined, four (7%) tested positive for GHSV. GHSV has been directly correlated to sexual activity and to infection with other STD. Herpetic infections can also exist in patients who have not demonstrated clinical signs of the disease. There is currently no known cure for GHSV. Sexual hygiene, early diagnosis, and the study of immunologic control of the infection are recommended methods at patient protection. (18 Refs) (In FRE)

PUBLIC POLICY INVOLVING ENVIRONMENTAL AND OCCUPATIONAL CARCINOGENS

88. OSHA AT THE THRESHOLD: SETTING PERMISSIBLE EXPOSURE LEVELS FOR KNOWN CARCINOGENS AFTER AMERICAN PETROLEUM INSTITUTE.

Blackmar GB
No affiliation given
San Diego Law Rev; 18(4/5):633-661 1981

The scientific uncertainty which complicates the setting of permissible exposure levels for carcinogens under the 1970 Occupational Safety and Health Act is examined. The Occupational Safety and Health Administration (OSHA) policy for dealing with such uncertainties, as represented by the Cancer Standard, is compared to the legal factual findings required by the American Petroleum Institute as a prerequisite to standard promulgation. Reviewing courts are encouraged to yield to OSHA's expertise in analyzing, interpreting, and applying complex scientific data, thereby enhancing OSHA's efficiency. (169 Refs)

89. REPORT OF THE FEDERAL PANEL ON FORMALDEHYDE.

Griesemer RA, Ulsamer AG, Arcos JC, Beall JR, Blair AE, Collins TF, De Serres FJ, Everson RB, Gamble JF, Gaylor DW, Groth DH, Kang HK, Keenlyside RA, Lloyd JW, Nettesheim P, Saffiotti U, Weisburger EK
Oak Ridge Natl. Lab., Oak Ridge, TN
Environ Health Perspect; 43:139-168 1982

The Federal Panel on Formaldehyde concluded that definitive experiments exist which demonstrate the mutagenicity and carcinogenicity of formaldehyde under laboratory conditions. Formaldehyde induces both gene mutations and chromosomal aberrations in a variety of test systems. Inhalation of formaldehyde causes cancer of the nose in rats. The concentrations of formaldehyde in inhaled air that caused nasal cancer in Fisher 344 rats are within the same order of magnitude as those to which humans may be exposed. The data presently available do not permit a direct assessment of the carcinogenicity of formaldehyde to man. Epidemiologic studies on exposed human populations are in progress and may further clarify the situation. Other experimental and human studies on toxic effects such as teratogenicity and reproductive disorders are as yet inadequate for a health risk assessment. The CIIT 24 mo study on animal carcinogenicity has not yet been completely evaluated. Additional data are expected on the effect of prolonged exposure to lower doses of formaldehyde and on the possible carcinogenicity of formaldehyde in the mouse. The panel recommends that, for a comprehensive health risk assessment, further experiments be conducted on the effects of other modes of exposure (ingestion and skin penetration), the effects in humans, and on the pharmacokinetics of formaldehyde in man and animals and the possible role for formaldehyde in reproductive and chronic respiratory disorders. It is the conclusion of the panel that formaldehyde should be presumed to pose a carcinogenic risk to humans. (Author abstract) (143 Refs)

90. EQUITY ASPECTS OF RISK MANAGEMENT: TRADE-OFFS BETWEEN PUBLIC AND OCCUPATIONAL HAZARDS IN THE NUCLEAR INDUSTRY.

Lombard J, Fagnani F
Centre d'Etude sur l'Evaluation de la Protection dans le Domaine Nucleaire, B.P. 48, 92260 Fontenay aux Roses, France
Nucl Saf; 22(5):570-576 1981

Equity problems arise in risk management whenever a situation justifies dividing the exposed population into specific subgroups. The usual practice in radiation protection in the nuclear fuel cycle, which consists roughly in dividing the population into two groups (plant employees and the general public), assumes that management of the protection system for each group is relatively independent. But in the case of public protection against risks associated with pressurized-water reactors, for example, we show that this hypothesis of independence is not valid and that there are significant risk trade-offs between the public and the employees. This leads us to question the valuation of the implicit value of a man-sievert, depending on whether one is dealing with employees or the public, for the answer to this question strongly affects the result of any optimization of choices in radiation protection. (Author abstract) (10 Refs)

91. OCCUPATIONAL SAFETY AND HEALTH: THE YEARS AHEAD.

Hollinshead AC
Dept. Medicine, George Washington Univ. Medical Center, 2300 I Street NW, Washington, DC, 20037
Am J Industr Med; 2(3):273-291 1981

The monitoring and regulatory roles of the National Institute of Occupational Safety and Health (NIOSH) are discussed together with a number of problems encountered in various industries dealing with those problems. Among the occupational hazards discussed are malignancies in workers exposed to asbestos, cadmium oxide dust, or other industrial materials; the fact that a number of interacting factors may increase the risks of exposure to these materials is emphasized. New findings and new technical methods that affect the way in which occupational safety hazards are perceived by the scientific community are discussed. Also considered are lessons from other national and international scientific groups; the role of NIOSH, scientists, and lawmakers in monitoring occupational health and safety; and a course of action based on a number of political and monetary factors. (86 Refs)

ANALYTICAL AND METHODOLOGICAL ASPECTS OF CANCER EPIDEMIOLOGY

92. METHOD OF ANALYSIS OF MONOTONE DOSE-RESPONSE PROBABILITIES AFTER LONG-TERM EXPOSURE TO A TOXICANT.

Scott BR
Inhalation Toxicology Res. Inst., Lovelace Biomedical and Environmental Res. Inst., P.O. Box 5890, Albuquerque, NM, 87185
Health Phys; 42(3):305-315 1982

A nonparametric hazard-function (HP) method for generating monotonically increasing incidence vs dose curves after long-term exposure to a toxic agent (eg radiation or chemical carcinogens) is described in detail in this paper. Here, incidence refers to the response-probability estimate that is adjusted for competing risks. The maximum likelihood principle was used to arrive at an appropriate point estimate of the cumulative hazard function (ie the negative natural logarithm of the proportion of nonresponders) and the response probability for an array of doses that depends on the data set to be analyzed. The resultant point estimates can be used to develop or select an appropriate model for risk vs dose assessment. As an example of the application of the HF method, data for liver neoplasms caused by long-term exposure of mice to 2-acetylaminofluorene and data for radiation pneumonitis and pulmonary fibrosis caused by long-term exposure of dogs to ionizing radiation are analyzed. (Author abstract) (15 Refs)

93. AN ALTERNATIVE TO ECOLOGIC REGRESSION ANALYSIS OF MORTALITY RATES.

Selvin S, Merrill D, Sacks ST
Dept. Biomedical and Environmental Health Sciences, Univ. California, Berkeley, Berkeley, CA, 94720
Am J Epidemiol; 115(4):617-623 1982

A number of recent papers have used geographically defined data and linear models to study the relationship between a series of epidemiologic factors and the frequency of disease. This 'ecologic regression' approach involves serious problems of interpretation. An alternate approach is discussed that does not depend on statistical models, produces easily interpreted results and yields statistical summaries that approximately parallel regression analysis. This alternative procedure is illustrated by using acute lymphocytic leukemia mortality data on a county level from among white females less than 5 yr of age between 1969-1977. (Author abstract) (15 Refs)

94. EFFECTS OF APPROXIMATION IN EXPOSURE ASSESSMENT ON ESTIMATES OF EXPOSURE-RESPONSE RELATIONSHIPS.

Armstrong BG, Oakes D
TUC Centenary Inst. Occupational Health, London Sch. Hygiene and Tropical Medicine, Keppel St., London WC1E 7HT, England
Scand J Work Environ Health; 8(Suppl1):20-23 1982

Effects of approximation in exposure assessment when the exposures are neither underestimated nor overestimated, so that over the whole study random unbiased error exists in the exposure assessment, are discussed. Known techniques and a new proposed method are presented. A study of the mortality of a cohort of 11,379 Quebec chrysotile asbestos miners and millers is used to exemplify the method. The procedure is based on a mechanism for adjusting exposure assessments, taking into account the distribution of exposures and the independently estimated distribution of measurements errors. (9 Refs)

95. EXTRAPOLATION FROM OCCUPATIONAL STUDIES: A SUBSTITUTE FOR ENVIRONMENTAL EPIDEMIOLOGY.

Enterline PE
Dept. Biostatistics, Graduate Sch. Public Health, Univ. Pittsburgh, Pittsburgh, PA, 15261
Environ Health Perspect; 42:39-44 1981

Estimation of health effects of specific contaminants in the general environment is discussed; effects may be assessed in an environment where doses can be measured. The dose must be large enough to counteract effects of unknown variables. Using Canadian, American and British data, three linear models for extrapolating to low level exposure are presented. The models are applied to two types of asbestos exposure: one from asbes-

tos heat shields in hair dryers and the other from asbestos exposure in public schools. Data on effects of asbestos exposure on cancer mortality is compared on the basis of linear and nonlinear models. (15 Refs)

96. EXPLORATION FROM INCOMPLETE DATA TO TOTAL OR LIFETIME RISKS AT LOW DOSES.

Schneiderman MA

Clement Associates, Inc., 1010 Wisconsin Ave., N.W., Washington, DC, 20007

Environ Health Perspect; 42:33-38 1981

Estimation of human risk from exposure to carcinogens is discussed; risk estimation is based both on epidemiology and laboratory data. In chronic disease epidemiology, data is gathered for both nonpositive and positive occupational cancer studies; the Occupational Safety and Health Administration has laid out rigid standards pertaining to these studies, but often, epidemiologic data cannot conform to these standards. Examples from radiation carcinogenesis are used to challenge traditional dose response relationships. Existing data may be inadequate for extrapolation to humans in any detail or for application to specific population subgroups. (19 Refs)

97. LIMITATIONS AND PROBLEMS IN DERIVING RISK ESTIMATES FOR LOW-LEVEL RADIATION EXPOSURE.

Cohen BL

Dept. Physics, Univ. Pittsburgh, Pittsburgh, PA, 15260

Yale J Biol Med; 54(5):329-338 1981

Some of the problems in determining the cancer risk of low-level radiation from studies of exposed groups are reviewed and applied to the study of Hanford workers by Mancuso, Stewart, and Kneale. Problems considered are statistical limitations, variation of cancer rates with geography and race, the 'healthy worker effect', calendar yr and age variation of cancer mortality, choosing from long lists, use of proportional mortality rates, cigarette smoking-cancer correlations, use of averages to represent data distributions, ignoring other data, and correlations between radiation exposure and other factors that may cause cancer. The current status of studies of the Hanford workers is reviewed. (Author abstract) (37 Refs)

98. THE ESTIMATION OF LOW-DOSE HAZARDS BY EXTRAPOLATION FROM HIGH DOSES.

Rossi HH

Radiological Res. Lab., Columbia Univ., 630 West 168th St., New York, NY, 10032

Yale J Biol Med; 54(5):339-344 1981

Empirical information on the effects of low doses of ionizing radiation is beset by severe limitations. Theoretical considerations of biophysics can guide the analysis of epidemiological data by indicating certain dose-response relations or eliminating others. Thus, it can be shown that at low doses there must be proportionality between dose and effect on non-interacting cells and that one must anticipate different dose-effect relations upon exposure to markedly different types of radiation. (Author abstract) (10 Refs)

99. ON THE RADIOLOGICAL SIGNIFICANCE OF INHALED URANIUM AND THORIUM ORE DUST.

Hannibal L

Natl. Inst. Radiation Hygiene, Frederikssundsvej 378, DK-2700 Bronshoj, Copenhagen, Denmark

Health Phys; 42(3):367-371 1982

The risk ensuing from inhalation of uranium and/or thorium bearing particles was evaluated by calculating the resulting effective committed dose equivalent. In mines, if respiration protection is not worn, radioactive ore dust may represent an important health physics problem. Oral intake of finely divided ore material does not appear to present a comparable problem. Accurate determination of the cumulative dust exposure is important for workplaces in the uranium and thorium mining industry. Personal respirable air monitors should be used for the most heavily exposed workers. Determination of the actual particle size is necessary to provide a more realistic risk evaluation. (4 Refs)

100. DIRECT ESTIMATES OF LOW-LEVEL RADIATION RISKS OF LUNG CANCER AT TWO NRC-COMPLIANT NUCLEAR INSTALLATIONS: WHY ARE THE NEW RISK ESTIMATES 20 TO 200 TIMES THE OLD OFFICIAL ESTIMATES?

Bross ID, Driscoll DL

Roswell Park Memorial Inst., 666 Elm St., Buffalo, NY, 14263

Yale J Biol Med; 54(5):317-328 1981

An official report on the health hazards to nuclear submarine workers at the Portsmouth Naval Shipyard (PNS), who were exposed to low-level ionizing radiation, was based on a casual inspection of the data and not on statistical analyses of the dosage-response relationships. When these analyses are done, serious hazards from lung cancer and other causes of death are shown. As a result of the recent studies on nuclear workers, the new risk estimates have been found to be much higher than the official estimates currently used in setting NRC permissible levels. The official BEIR estimates are about one lung cancer death per yr per million persons per rem. The PNS data show 189 lung cancer deaths per yr per million persons per rem. (Author abstract) (15 Refs)

101. PROBLEMS IN EVALUATING RADIATION DOSE VIA TERRESTRIAL AND AQUATIC PATHWAYS.

Vaughan BE, Soldat JK, Schreckhise RG, Watson EC, McKenzie DH

Ecological Sciences Dept., Pacific Northwest Lab., Battelle Memorial Inst., Richland, WA, 99352

Environ Health Perspect; 42:149-161 1981

Environmental pathways models used for predictive assessment of radiation dose are discussed and characteristics of mathematical exposure models are described. Detailed evaluations are made of source considerations influencing dose, including dispersal mechanisms, mobilization and uptake mechanisms, and critical food pathways. Accuracy of dose estimates is usually overestimated in practice from two to six times due to the use of generic concentration ratios instead of site specific data. The need to improve parametrization of pathways models so as to increase validity is discussed. (73 Refs)

102. STATISTICAL LIMITATIONS IN RELATION TO SAMPLE SIZE.

Land CE
Environmental Epidemiology Branch, NCI, Bethesda, MD, 20205
Environ Health Perspect; 42:15-21 1981

Examples from radiation carcinogenesis are used to illustrate difficulties in estimating cancer risks for low doses of a carcinogen. Using direct estimation based on data from a population exposed to low doses, an example is given for a linear dose-response relationship for female breast cancer induced by exposure to sparsely ionizing radiation. Leukemia incidence data from a life span study of Nagasaki A-bomb survivors is used to illustrate curve fitting, by which higher dose data determine lower risk estimates. Although more is known about dose-response relationships for ionizing radiation than for any other environmental carcinogen, estimates of cancer risk for low radiation doses have sometimes disagreed by factors of 100 or more. (11 Refs)

GENERAL AND MISCELLANEOUS FACTORS

103. CARCINOGENICITY AND ITS EFFECT ON MEDICINAL RESEARCH PROGRAMS IN THE USA.

Van Ryzin RJ
Pharmaceutical Res. and Development, Sandoz, Inc., East Hanover, NJ, 07936
Med Res Rev; 2(2):153-166 1982

Governmental agencies charged with protecting the public from harmful chemicals have developed policies for identification, characterization, and control of potential human carcinogens. Scientific issues are discussed with respect to evidence for identification of a carcinogen (epidemiological, rodent carcinogenicity bioassays, short-term tests, chemical structure), predictability of animal tests for humans, the rodent bioassay (study design, statistical analysis, tumor classification), qualitative and quantitative risk assessment, and mechanisms of carcinogenesis (epigenetic and genetic, ultimate carcinogen vs procarcinogen). Historical emergence of a carcinogen policy is reviewed with respect to legislative strategies, scientific vs regulatory decision making, and the Environmental Protection Agency's principles and Occupational Safety and Health Act's generic carcinogen policy. The impact of carcinogenicity on medicinal research programs involves earlier screening for potential carcinogenicity, product contaminants and breakdown products, workplace safety and toxic waste disposal, commitment to bioassays before therapeutic value to man is known, and the Food and Drug Administration Bureau of Drugs guidelines and Bureau of Foods structure guide. The attempt to separate the scientific risk assessment from the regulatory political/societal decision-making is a significant feature of the evolving carcinogen policy of the regulators. This approach should eliminate the hidden human bias from the scientific assessment and allow for updating the scientific decision based on newer scientific knowledge. (37 Refs)

104. CAUSES OF LEUKEMIAS AND CANCER: RECENT PROGRESS.

Bernard J
bd. de Perolles 53, 1700 Fribourg, Switzerland
Rev Med Suisse Romande; 102(1):95-103 1982

Roles of viruses, radiation, and toxic chemical substances in the development of cancer are discussed. Burkitt's lymphoma (BL), a B-cell lymphoma predominantly localized in facial bones and found most frequently in certain areas of Africa, was one of the first cancers to be related to a virus, Epstein Barr virus (EBV). EBV virus and its antibodies are found in BL patients. EBV virus, the infective agent in mononucleosis, has been shown to cause BL in marmosets. BL shows high correlations with geographic areas with levels of malaria, with chromosome translocation 8:14, and with lower socioeconomic groups. Viruses have also been implicated in cervix cancer (herpes virus), liver cancer (hepatitis B), and Hodgkin's disease. Evidence of radiation-induced cancers has been gained from studies of physicians, radiologists, and scientists exposed to radiation and of Hiroshima survivors. The relationship between radiation and cancer development is significant but varies among individuals. Dietary factors, such as tobacco (lung, bladder, and digestive cancers), alcohol (cirrhosis and liver cancer), and diet in general (high lipid diet and breast cancer) have been related to increased incidences of cancer. Leukemia has been observed in Hodgkin's disease patients treated with chemotherapy. A high incidence of lymphomas has been noted in patients who have undergone organ transplants. The role of heredity and geography in the etiology of cancer is discussed. (no Refs) (In FRE)

105. EVOLVING PERSPECTIVES ON THE EPIDEMIOLOGY AND BIOLOGY OF CANCER: NEEDS AND OPPORTUNITIES.

Upton AC
Inst. Environmental Medicine, New York Univ. Medical Center, New York, NY
Cancer Research in the People's Republic of China and the United States of America: Epidemiology, Causation and New Approaches to Therapy, Proceedings of a Conference held in New York, 28-29, March, 1980. Marks PA, ed. New York, Grune and Stratton, 273 pp., 1981.

Differences in the incidence of cancer (CA) in different parts of the world are presented and the needs and opportunities of research in the epidemiology and biology of CA are discussed. Assumed parameters of a model for estimating CA risks associated with low-level ionizing radiation, estimated risks of radiation-induced CA, and estimates of the annual contribution of radiation exposure to the lifetime burden of fatal CA to the United States (US) population are presented. Time-trends in lung CA mortality and cigarette consumption in England and Wales; incidence of lung CA in regular cigarette smokers in relation to the number of cigarettes smoked/day; time-trends in CA death rates in US males standardized for age; and dose-incidence curves for breast CA in relation to radiation exposure in women surviving atomic-bomb radiation, women treated with x-rays for acute postpartum mastitis, and women subjected to multiple fluoroscopic examinations for pulmonary tuberculosis are presented. (15 Refs)

106. CANCER RESEARCH IN THE PEOPLE'S REPUBLIC OF CHINA AND THE UNITED STATES OF AMERICA. EPIDEMIOLOGY, CAUSATION AND NEW APPROACHES TO THERAPY. PROCEEDINGS OF A CONFERENCE HELD IN NEW YORK, 28-29, MARCH, 1980.

Marks PA
Memorial Sloan-Kettering Cancer Center, New York, NY
Cancer Research in the People's Republic of China and the United States of America. Epidemiology, Causation and New Approaches to Therapy, Proceedings of a Conference held in New York, 28-29, March, 1980. New York, Grune and Stratton, 273 pp., 1981.

Cancer (CA) epidemiology, causation, diagnosis, and therapy are discussed. An overview of CA research, needs and opportunities of evolving perspectives on the epidemiology of CA, a national survey of CA mortality in China, geographic patterns of CA in the United States, and progress of CA epidemiology in China are presented. The study of a virus-related protein in human breast CA, the nature of CA cells, potential carcinogens in the diet of individuals at high risk for esophageal CA, association of the Epstein-Barr virus with nasopharyngeal carcinoma (CR), aspects of research studies on liver CR, the mechanisms of action of carcinogens and tumor promoters and their relevance to CA prevention, immunological studies of esophageal CA in man, and nasopharyngeal CR epidemiology, risk factors and screening for early detection are presented. Recent progress in antineoplastic drug research in China, gene amplification in methotrexate resistant cells, and studies on harringtonine as a new antitumor drug are discussed. Advances in the study of CA epidemiology, biology, and therapy in the laboratories are offering new options for the prevention and treatment of CA. The substantive exchanges among scientists of these countries provide data useful for CA research and treatment. (365 Refs)

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CHEMICAL CARCINOGENESIS

1. TOXICITY AND METABOLISM OF ACRYLONITRILE.
Sapota A, Chmielnicka J
Zaklad Metabolizmu Substancji Toksycznych, Instytut Medycyny Pracy, ul. Teresy 8, 90-950 Lodz, Poland
Med Pr; 32(1):25-33 1981
In POL

2. A REVIEW OF THE GENOTOXICITY OF FOOD, DRUG AND COSMETIC COLOURS AND OTHER AZO, TRIPHENYLMETHANE AND XANTHENE DYES.
Combes RD, Haveland-Smith RB
Dept. Biological Sciences, Portsmouth Polytechnic, King Henry I St., Portsmouth, PO1 2DY, Hants, England
Mutat Res; 98(2):101-248 1982

3. CARCINOGENICITY OF AIRBORNE FINE PARTICULATE BENZO(A)PYRENE: AN APPRAISAL OF THE EVIDENCE AND THE NEED FOR CONTROL.
Perera F
Natl. Resources Defense Council, Inc., 122 East 42nd St., New York, NY, 10168
Environ Health Perspect; 42:163-185 1981

4. TOXICOLOGY OF N-NITROSO COMPOUNDS.
Coulston F, Olajos EJ
Albany Medical Coll., Albany, NY, 12208
Ecotoxicol Environ Saf; 6(1):89-96 1982

5. CRITICAL REVIEW OF THE MUTAGENIC AND OTHER GENOTOXIC EFFECTS OF DIRECT COAL LIQUEFACTION.
Kimball RF, Munro NB
Oak Ridge Natl. Lab., Oak Ridge, TN
Critical Review of the Mutagenic and Other Genotoxic Effects of Direct Coal Liquefaction. Available from National Technical Information Service, Springfield, VA, as DE81027859:, 216 pp., 1981.

6. CARCINOGENICITY AND ITS EFFECT ON MEDICINAL RESEARCH PROGRAMS IN THE USA.
Van Ryzin RJ
Pharmaceutical Res. and Development, Sandoz, Inc., East Hanover, NJ, 07936
Med Res Rev; 2(2):153-166 1982

7. ANTIPROTOZOAL DRUGS (SIDE EFFECTS).
Nir I
Dept. Pharmacology and Experimental Therapeutics, The Hebrew Univ., Hadassah Medical Sch., Jerusalem, Israel
Side Eff Drugs Annu; (5):278-284 1981

8. DRUGS USED IN TUBERCULOSIS AND LEPROSY (SIDE EFFECTS).
Elis J
Inst. Pharmacology, Czechoslovak Acad. Sciences, Albertov 4, Prague 2, Czechoslovakia
Side Eff Drugs Annu; (5):290-297 1981

9. SEX HORMONES AND RELATED COMPOUNDS, INCLUDING ORAL CONTRACEPTIVES.
Plotz EJ, Nocke W, Schander K, Patt V, Kaulhausen H
Dept. Obstetrics and Gynecology, Univ. Bonn, 5300 Bonn-Venusberg, W. Germany
Side Eff Drug Annu; (5):358-380 1981

RADIATION CARCINOGENESIS

10. NEPTUNIUM - THE NEGLECTED ACTINIDE: A REVIEW OF THE BIOLOGICAL AND ENVIRONMENTAL LITERATURE.
Thompson RC
Biology Dept., Pacific Northwest Lab., Richland, WA, 99352
Radiat Res; 90(1):1-32 1982

11. CARCINOGENIC EFFECT OF RADIOACTIVE PRODUCTS.
Vasilenko IIa
No affiliation given
Vopr Onkol; 28(1):76-83 1982
In RUS

DIETARY FACTORS IN CARCINOGENESIS

12. FIBRES, NUTRITION AND THE GUT.
Schrijver M, Tytgat GN
Dept. Internal Medicine, Div. Gastroenterology, Univ. Amsterdam, 1 e Helmerstraat 104, 1054 EG Amsterdam, The Netherlands
Neth J Med; 25(2):49-55 1982

13. DIETARY FIBER AND DISEASE.
Kritchevsky D
Wistar Inst. Anatomy and Biology, Philadelphia, PA
Bull NY Acad Med; 58(3):230-241 1982

14. ASSESSING HUMAN EPIDEMIOLOGIC DATA ON DIET AS AN ETIOLOGIC FACTOR IN CANCER DEVELOPMENT.
Enstrom JE
Sch. Public Health, Univ. California, Los Angeles, CA
Bull NY Acad Med; 58(3):313-322 1982

15. NUTRITION AND CANCER: MECHANISMS OF GENOTOXIC AND EPIGENETIC CARCINOGENS IN NUTRITIONAL CARCINOGENESIS.
Weisburger JH, Horn C
American Health Foundation, Valhalla, NY, 10595
Bull NY Acad Med; 58(3):296-312 1982

EPIDEMIOLOGY, ETIOLOGY AND GENETIC ASPECTS OF HUMAN CANCER

16. THE AH LOCUS, A MULTIGENE FAMILY NECESSARY FOR SURVIVAL IN A CHEMICALLY ADVERSE ENVIRONMENT: COMPARISON WITH THE IMMUNE SYSTEM.
Nebert DW
Developmental Pharmacology Branch, National Inst. Child Health, NIH, Bethesda, MD, 20205
Adv Genet; 21:1-52 1982

ENVIRONMENTAL AND OCCUPATIONAL FACTORS IN CARCINOGENESIS

17. SKIN CANCER: OCCUPATIONAL CAUSES.
Bickers DR
Dept. Dermatology, Case Western Reserve Univ., Cleveland, OH
Consultant; 22(4):392-393,397,400-401 1982

18. OCCUPATIONAL AND ENVIRONMENTAL HEALTH PROBLEMS OF THE DEVELOPING OIL SHALE INDUSTRY: A REVIEW.
Rom WN, Lee JS, Craft BF
Rocky Mountain Center Occupational and Environmental Health, Dept. Internal Medicine, Family and Community Medicine, Univ. Utah Sch. Medicine, Bldg. 512, Salt Lake City, UT, 84112
Am J Industr Med; 2(3):247-260 1981

19. POLYCYCLIC AROMATIC HYDROCARBONS IN THE OCCUPATIONAL ENVIRONMENT: WITH SPECIAL REFERENCE TO BENZO[A]PYRENE MEASUREMENTS IN SWEDISH INDUSTRY.
Lindstedt G, Sollenberg J
Chemistry Dept., Natl. Board Occupational Safety and Health, S-171 84 Solna, Sweden
Scand J Work Environ Health; 8(1):1-19 1982

20. GENETIC RISKS AND ENVIRONMENTAL SURVEILLANCE: EPIDEMIOLOGICAL ASPECTS OF MONITORING INDUSTRIAL POPULATIONS FOR ENVIRONMENTAL MUTAGENS.
Buffler PA, Aase JM
Sch. Public Health, Univ. Texas Health Science Center at Houston, P.O. Box 20186, Houston, TX, 77025
JOM; 24(4):305-314 1982

21. OSHA AT THE THRESHOLD: SETTING PERMISSIBLE EXPOSURE LEVELS FOR KNOWN CARCINOGENS AFTER AMERICAN PETROLEUM INSTITUTE.
Blackmar GB
No affiliation given
San Diego Law Rev; 18(4/5):633-661 1981

22. CARCINOGENESIS: PROBLEMS AND PARADOXES. THE 1981 GEORGE H. GEHRMANN LECTURE.
Kotin P
4505 South Yosemite, 339, Denver, CO, 80237
JOM; 24(4):290-294 1982

CELLULAR AND MOLECULAR MECHANISMS IN CARCINOGENESIS

23. MODIFICATIONS OF CHROMATIN STRUCTURE IN CONTROL OF GENE EXPRESSION.
Hull LA
104 Depot St., New Sharon, IA, 50207
Med Hypotheses; 8(2):113-133 1982

24. PLASMINOGEN ACTIVATORS IN NEOPLASTIC CELLS.
Goloborod'ko OP, Veremeenko KN
A. I. Kolomiichenko Res. Inst. Otolaryngology, Kiev, USSR
Eksp Onkol; 4(1):3-7 1982
In RUS

25. TUMOR PROMOTION BY REGENERATIVE EPIDERMAL HYPERPLASIA IN MOUSE SKIN.
Argyris TS
Dept. Pathology, Upstate Medical Center, State Univ. New York, Syracuse, NY, 13210
J Cutan Pathol; 9(1):1-18 1982

26. SEX HORMONES AND LIVER CANCER.
Williams GM
Naylor Dana Inst. for Disease Prevention, New York Medical Coll., Valhalla, NY
Lab Invest; 46(3):352-354 1982

METHODOLOGY IN CARCINOGENESIS RESEARCH

27. UTILIZATION OF CELL TRANSFORMATION TESTS IN THE DETECTION OF CHEMICAL CARCINOGENS.
Elias Z, Cavelier C
Institut National de Recherche, Centre de Recherche de Nancy, avenue de Bourgogne, F-54500 Vandoeuvre-les-Nancy, France
Bull Cancer (Paris); 69(1):33-57 1982
In FRE

28. FAILURES AND CRITIQUE OF THE BEIR III LUNG CANCER RISK ESTIMATES.
Cohen BL
Univ. Pittsburgh, Pittsburgh, PA, 15260
Health Phys; 42(3):267-284 1982

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29. CANCER. AN INTRODUCTION.
Creasey WA
Dept. Pharmacology, Univ. Pennsylvania Sch. Medicine, Philadelphia, PA
Cancer. An Introduction. New York, Oxford University Press, 271 pp., 1981.

30. CANCER 1980: ACHIEVEMENTS, CHALLENGES, AND PROSPECTS.
Clark RL
Univ. Texas System Cancer Center, M.D. Anderson Hosp. and Tumor Inst., 6723 Bertner Ave., Houston, TX, 77030
Cancer; 49(9):1739-1745 1982

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SERIES CK02 No. 82/09

SEPTEMBER, 1982

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U.S. DEPARTMENT OF HEALTH AND HUMAN SERVICES
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ENVIRONMENTAL FACTORS: POLLUTION

1. FORMALDEHYDE AND OTHER CARBONYLS IN LOS ANGELES AMBIENT AIR.

Grosjean D
Environmental Res. and Technology, 2625 Townsgate Road, Westlake Village, CA, 91361
Environ Sci Technol; 16(5):254-262 1982

Ambient levels of carbonyl compounds in the Los Angeles air basin were measured under conditions of moderate to severe photochemical pollution. Formaldehyde concentration ranged from 2-48.1 ppb. Acetaldehyde concentration ranged from 0-35 ppb. Both compounds showed significant diurnal variations. Concentrations of other carbonyls including propanal, butanal, 2-butanone, and benzaldehyde varied up to 14 ppb. The method employed, which consisted of sampling with 2,4-dinitrophenylhydrazine reagent and analyzing with high pressure liquid chromatography, appeared to have distinct advantages over other trace carbonyl assay techniques. (26 Refs)

2. HEALTH, SAFETY AND ENVIRONMENT DEPARTMENT, ENVIRONMENTAL SCIENCES BRANCH. PROGRESS REPORT, JANUARY-JUNE 1980.

Siciliano CL
Atomics International Div., Rocky Flats Plant, Golden, CO
Health, Safety and Environment Department, Environmental Sciences Branch. Progress Report, January-June 1980. Available from National Technical Information Service, Springfield, VA, as DE81027696:, 44 pp., 1981.

A summary is presented of activities of the Environmental Studies and Environmental Analysis Groups during the period January through June 30, 1980. Four major projects are reported; namely, dust transport including filter efficiency studies, distribution of transuranics in sediment, critical ecological pathways for radionuclides, and ecosystem compartmentalization of transuranics. Progress is described for the special programs dealing with management of open space lands at Rocky Flats, assurance of quality in environmental monitoring measurements, assessment of epidemiological studies of health effects purported to be related to the Plant, and evaluation of environmental monitoring data. Some of the reported project activities on Rocky Flats Plant site include studies of: airborne dust concentration and specific americium-241 activity in the field east of the asphalt pad; vertical fluxes of dust in the same field; vertical sediment sampling profiles of plutonium-239,-240 and americium-241 in the Great Western Reservoir spillway; radiological sediment sampling of water bodies on and near the Plant site; measured frequency and coverage values of representative plant species and their importance values for two test plots near the Plant; transuranic specific activities of vegetation from the same two test plots; airborne deposition and root uptake of transuranics by plants at the Lindsay Ranch Pond and the greenhouse site; and the tissue analysis (for transuranics) of deer road-killed near or on the Plant site. (Author abstract)

3. POLYCHLORINATED BIPHENYLS IN INDOOR AIR.

MacLeod KE
Environmental Toxicology Div., Health Effects Res. Lab., Research Triangle Park, NC
Polychlorinated Biphenyls in Indoor Air. Available from National Technical Information Service, Springfield, VA, as PB82-154931:, 5 pp., 1981.

Polychlorinated biphenyls (PCBs) have been recognized as environmental contaminants since the mid-1960s. Until recently, however, little work has been done on identifying levels of PCBs in the indoor air. This paper describes a method for the analysis of PCBs utilizing low-volume indoor air sampling. The method uses polyurethane foam as a collector and has a limit of detection of about 0.01 micrograms/cu m. This study shows that indoor air whether in commercial, industrial, or residential buildings, contains levels of PCBs at least one order of magnitude higher than outdoor levels. Defective fluorescent light ballasts are also shown to emit PCBs and to be an important source of indoor atmospheric contamination. (Author abstract)

4. HEALTH EFFECTS OF RADON EMISSIONS FROM URANIUM MILL TAILINGS.

Cohen BL
Univ. Pittsburgh, Pittsburgh, PA, 15260
Health Phys; 42(5):695-702 1982

The problem of health effects of radon emissions from uranium mill tailings is reviewed. The history of estimates of these effects and how they have been refined by further research is traced, and a current best estimate is given. The theory and practice of mitigating the effects by covering tailings with soil are described, and the present situation as regulated by the new 10 CFR 40, Appendix A is evaluated. (Author abstract) (29 Refs)

5. THERAPY AND PROGNOSIS OF PRIMARY PULMONARY SARCOMAS AND SARCOMATOUS METASTASES OF THE LUNGS.

Gebauer C
II. Medizinische Klinik, Universitat, Langenbeckstrasse 1, D-6500 Mainz, W. Germany
Prax Klin Pneumol; 35(Suppl1):905-910 1981

Features of primary pulmonary sarcoma are illustrated through a study of findings in 435 patients (394 were literature reported cases, and 41 were cases observed by the author). The av age of the patients was approx 45 yr, and the ratio of male to female patients was approx 1.5:1. The majority (58.8%) of the tumors were located in the right lung. No relationship was found between the occurrence of primary pulmonary sarcoma and exposure to exogenous noxens such as cigarette smoke, air pollution, etc. Most patients developed symptoms only when the tumors were relatively large; uncharacteristic cough and thoracic pain were the most common symptoms. Radiologic examinations generally provided nonspecific findings, and few final diagnoses were made without the aid of thoracotomy. Surgery as early as possible, followed by irradiation and chemotherapy if needed, produced the most favorable prognoses. The most common sites of metastases were the lymph nodes, lungs, liver, brain, and pleura. Based on a review of 2-and 5-yr survival rates, recurrence rates, and findings of metastases at autopsy, a malignancy scale was developed for the various histologic forms of pulmonary sarcoma. Forms with well-differentiated mature cells (eg, fibrosarcoma and spindle cell sarcoma) had the lowest malignancy grade, whereas forms with completely undifferentiated cells (polymorphocell sarcoma) and carcinosarcoma had the highest malignancy grade. The prognosis for pulmonary metastases of sarcomas was poor. (7 Refs) (In GER)

ENVIRONMENTAL FACTORS: COMMERCIAL PRODUCTS

6. PASSIVE SMOKING-A HEALTH HAZARD?.

Weber A

Institut fur Hygiene und Arbeitsphysiologie, Eidgenossischen Technischen Hochschule, Clausiusstr. 21, CH-8092 Zurich, Switzerland

Dtsch Med Wochenschr; 107(9):323-325 1982

The question of whether passive smoking poses a health hazard is addressed. The following topics are considered dangers of passive smoking for children and sick people, especially those with asthma, chronic bronchitis, etc; evidence to support and refute the contention that passive smoking increases the risk of development of lung cancer; lung function in passive smokers in the workplace; and passive smoking and subjective evaluation of its effects. Recommended levels of exposure and measures for reducing the amount of passive smoking are discussed. (28 Refs) (In GER)

7. ORAL CONTRACEPTIVE USE AND MALIGNANT MELANOMA.

Bain C, Hennekens CH, Speizer FE, Rosner B, Willett W, Belanger C

(c/o Hennekens) Channing Lab., 180 Longwood Ave., Boston, MA, 02115

JNCI; 68(4):537-539 1982

There was no overall relationship between a prior history of oral contraceptive (OC) use and the development of melanoma among 141 cases of nonfatal malignant melanoma and 2,820 age-matched controls drawn from respondents to a large postal survey of registered US nurses; crude relative risk (RR) was 0.93 and 95% confidence limits (CL) were between 0.64 and 1.36. Adjustment for a number of additional variables did not alter this estimate materially. Duration of OC use and interval since first use were similarly unrelated to the occurrence of melanoma. For women diagnosed before age 40, there was a crude positive association of 'ever' use of OC and melanoma (RR = 1.78; 95% CL, 1.11-2.86). However, adjustment for geography and other. variables diminished this association and rendered it statistically not significant (RR = 1.43; 95% CL, 0.83-2.46). These data do not support the hypothesis that OC use is an independent risk factor for melanoma. (Author abstract) (24 Refs)

8. NITROSAMINES.

Aigner K

Pneumonologische Abteilung, Krankenhaus der Elisabethinen, Fadingerstr. 1, A-4020 Linz-Donau, Austria

Wien Med Wochenschr; 132(71,Suppl):75-79 1982

Health hazards of nitrosamines (NA) are reviewed. NA are formed by the reaction of amines or amides with nitrite or nitrous gases. NA are found in foods, cosmetics, technical oils, pesticides, tobacco, and drugs. Elevated levels of NA have been found in patients with some diseases, including gastric carcinoma. Animal studies have confirmed the carcinogenicity of NA. Further research is required to reduce intake and formation of NA in humans. (17 Refs) (In GER)

9. EPIDEMIOLOGIC CHARACTERISTICS OF MAMMARY FIBROADENOMA.

Ruiz Moreno JA, Medina Malagon LE, Alcaide Sanchez J

Departamento de Gineco-Obstetricia, Clinica de Ginecologia Oncologica, Hospital Central Militar, Mexico, D.F., Mexico

Ginecol Obstet Mex; 49(294):225-238 1981

Retrospective study (1967-1976) of patients (13-60 yr old) with mammary fibroadenoma (MFA) was analyzed and compared with 150 healthy controls. Only the patients with histologically confirmed diagnosis were included. Excluded were patients with juvenile, pregnant, lactating, and giant MFA. Of the 158 patients, only 143 had a single FAM, 2 or more MFA were found in 41, and bilateral MFA was found in 29. No relationship was observed between MFA and menstrual history, lactation, or mammary trauma. Familial history of mammary pathology, hormonal anticonceptional drugs, and nulliparity favor MFA. Ninety-six percent of the patients diagnosed themselves MFA, and went for medical consultation immediately or greater than 5 yr later. In 115 patients symptoms consisted of pain, in 18 premenstrual tension, itching of nipple in 6, and others. Without symptoms were 69 of the patients. Growth of MFA was slow in 107 of the patients, rapid in 45, and negative in 32. Size of av lesion was 3.4 x 2.9 cm and the biggest was 8 x 7 cm. Location of the MFA was in the upper outer quadrant in 110, in the lower outer in 64, in the upper inside in 30, in the lower inside in 24, and behind the nipple in 10 patients. Associated mammary pathology in 11 of the patients was fibrocystic mastopathy, in 2 each was epithelial hyperplasia, florid adenosis, fat necrosis, adenocarcinoma, and in 1 was phyllode cystosarcoma. (25 Refs) (In SPA)

ENVIRONMENTAL AND OCCUPATIONAL FACTORS: RADIATION

10. MALIGNANT MELANOMA INCIDENCE AT THE LOS ALAMOS NATIONAL LABORATORY.

Acquavella JF, Tietjen GL, Wilkinson GS, Key CR, Voelz GL

J. F. A., Epidemiology Group, MS K-404, Health Div., Los Alamos Natl. Lab., Los Alamos, New Mexico, 87545

Lancet; 1(8277):883-884 1982

In an analysis of melanoma incidence for 1969 to 1978 among 11,308 workers at the Los Alamos National Laboratory in New Mexico 6 cases were detected in the total cohort, in which 5.69 cases would be expected (standardized incidence ratio [SIR] = 105; 90% confidence interval [CI] = 51,198) on the basis of incidence rates for the State of New Mexico, specific for age, sex, and ethnic origin. Among the white non-Hispanic men, three cases were detected, whereas 4.4 would be expected. The associated SIR of 68 (90% CI = 23,163) does not suggest excess melanoma incidence in this subcohort. A direct comparison with Statewide incidence rates gave similar results. These results do not agree with the threefold excess of malignant melanoma incidence found among white male employees at the Lawrence Livermore National Laboratory. (Author abstract) (10 Refs)

11. RADIOLOGY AND DETECTION OF BREAST CANCER.

Zalcman R

Service de Radiologie, Centre Hospitalier Joseph Bracops, Bruxelles, Belgium

Rev Med Brux; 3(2):85-86 1982

Utility and safety of radiographic examinations for detection of breast cancer are discussed. For breast tumors of 0.5 cm or less the survival rate is 93%. Lymphatic metastases are present in 13% of 0.5-2 cm tumors and in 71% of those greater than 2 cm. Thus the chances for survival are greater in patients in whom tumors are detected early. In one study of 17,000 women, 183 breast cancers were detected. Of the 41 cancers, less than 0.5 cm, 93% were visible radiographically while only 9% were palpable. Of tumors 0.5-1 cm (33 cases), 1-2 cm (59), and greater than 2 cm (50), 70%, 80%, and 85%, respectively, were detectable radiographically while 40%, 50%, and 90%, respectively, were palpable. Of 139 breast tumors detected in a study of 16,000 women, greater than 45% were detectable only by radiography. In another study of 271,000 women, 106 of 246 breast cancers were detected only by radiography. Although the risk of cancer increases as a function of dose for doses of 100 rads or more, the risk/benefit analysis for breast radiography favors the use of low dose radiography for early detection of breast cancer. The frequency of breast radiography for various age groups is discussed. (12 Refs) (In FRE)

12. ALARA DOSIMETRY STUDY FOR NON PRODUCTIVE RADIATION EXPOSURES IN PACIFIC NORTHWEST LABORATORY FACILITIES.

Hadlock DE

Battelle Pacific Northwest Lab., Richland, WA

ALARA Dosimetry Study for Non Productive Radiation Exposures in Pacific Northwest Laboratory Facilities. Available from National Technical Information Service, Springfield, VA, as DE81027838:, 21 pp., 1981.

A special ALARA study was conducted during 1980 in selected Pacific Northwest Laboratory facilities. The study utilized thermoluminescent dosimeters (TLDs) which were designed to detect gamma, beta, and neutron exposures; however, only gamma exposures are evaluated in this report. The processing of ALARA (As Low As Reasonably Achievable) dosimeters was performed by the Dosimetry Technology Section of the Radiological Sciences Department. Evaluation of dosimetry data and locations was performed in conjunction with the Radiation Monitoring Section and the Radiological Safety and Engineering Section of the Occupational and Environmental Protection Department. This study was prompted by a DOE-RL directive to reduce radiation exposure to As Low As Reasonably Achievable (ALARA) with a goal of no personnel whole-body penetrating exposures exceeding 3 rem for calendar year 1980. The purpose of this study was to characterize the background radiation environment at selected locations within PNL facilities. Attention was focused on non productive radiation exposure received from the work environment. (Author abstract)

OCCUPATIONAL FACTORS: SPECIFIC AGENTS OR INDUSTRIES

13. AN INCREASED RISK FOR LUNG CANCER MORTALITY ASSOCIATED WITH SUGARCANE FARMING.

Rothschild H, Mulvey JJ

Dept. Medicine, Louisiana State Univ. Medical Center, New Orleans, LA, 70112

JNCI; 68(5):755-760 1982

In a study to determine putative occupation-related factors responsible for the excessive mortality due to lung cancer in southern Louisiana, the next-of-kin were interviewed of 284 of 400 persons (71%) randomly sampled from a total of 815 persons who died of lung cancer during 1971 through 1977 and had lived in any of 10 parishes (counties) of southern Louisiana. Of the decedents, 108 (38%) had been employed for at least 6 mo as sugarcane farm workers at some time during their lives. Logistic regression analysis indicated this industrial involvement differed significantly (p less than 0.0001) from that of a control group, consisting of persons who had died of any cause other than lung cancer and who were matched for yr of death, age, sex, race, and parish of residence; only 58 (20%) matched controls had had sugarcane farm employment (odds ratio = 2.4; 95% confidence interval, 2.0-2.9). Employment in other industries or tobacco consumption could not account for the elevated risk of lung cancer mortality associated with sugarcane farming. After adjustment for smoking, the relative risk estimate of lung cancer mortality for sugarcane farm workers was 2.4 (95% confidence limits, 1.7-3.6). The sugarcane farmers who died with lung cancer had worked for longer periods in the sugarcane farm industry than did those sugarcane farmers in whom lung cancer did not develop (p = 9.006). No specific histopathologic cell type was noted to be increased in persons who had been employed in sugarcane farming; however, two sugarcane farmers had had mesotheliomas. (Author abstract) (30 Refs)

14. VINYL CHLORIDE EXPOSURE AND MORTALITY AMONG GERMAN CHEMICAL WORKERS IN COMPARISON WITH MORTALITY AMONG NONEXPOSED WORKERS AND PVC MANUFACTURING WORKERS.

Greiser E, Reinl W, Weber H

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Zentralbl Arbeitsmed Arbeitsschutz Proph; 32(2):44-62 1982

A historical prospective study compared mortality among workers in the German chemical industry. All workers studied were males of German or Austrian nationality. Three cohorts included 7,021 workers exposed to vinyl chloride monomer (VCM) and polyvinyl chloride (PVC), 4,910 chemical workers not exposed to VCM or PVC, and 4,007 workers exposed to PVC. Follow-up rate at the end of the study was approx 90%. The total male population of West Germany for corresponding yr served as controls. Standardized mortality ratios (SMR) showed no 'healthy worker effect' for PVC or VCM/PVC workers. SMR for malignant hepatic tumors was significantly higher than for controls. The increase was dose-dependent. Nonexposed workers showed a small increase in SMR for hepatic malignancies. VCM/PVC worker showed a significantly increased SMR for lymphatic and hematopoietic malignancies. PVC workers showed an increased SMR for malignant brain tumors. VCM/PVC, PVC, and nonexposed workers all

showed an increased SMR for ischemic heart disease compared with controls. Because of long latency time for development of malignant tumors and the increasing incidence of hepatic hemangiosarcomas, additional follow-up studies of VCM/PVC workers are urged. (20 Refs) (In GER)

15. HISTORICAL ASPECTS OF PULMONARY CANCER IN SCHNEEBERGER MINES.

Wilde J
Tschaikowskystrasse 12, 7010 Leipzig, E. Germany
Z Aerztl Fortbild (Jena); 76(3):118-120 1982

Schneeberger's (SB) mines have been in operation since 1410. First descriptions of mala metallorum (MM) come from that time, and mortality was estimated at 52-75%. In 1879 the MM was identified with pulmonary cancer (PC). Lesions due to silicosis, accumulation of radioactivity in fungi, chronic irritation with As and Cr, and toxins from fungi are contributing factors in the carcinogenesis of people working in SB mines. The SB PC is typically a central bronchial carcinoma with small cells and multiple foci, and with a latency period of 13-50 working yr in the SB mines. The disease lasts 2-4 yr. (20 Refs) (In GER)

16. MUTAGENIC, CARCINOGENIC AND TERATOGENIC EFFECTS OF STYRENE.

Sram RJ, Pohlova H, Topinkova E
Klinika hygieny a epidemiologie, Srobarova 48, 100 42 Prague 10, Czechoslovakia
Prac Lek; 34(2):68-72 1982

Studies on the mutagenic, carcinogenic and teratogenic properties of styrene are reviewed. Styrene was found to be mutagenic and teratogenic in experimental animals and humans and carcinogenic in experimental animals (inducing pulmonary adenoma and adenocarcinoma, as well as hepatocellular carcinoma in mice). Epidemiological studies failed to demonstrate the increased mortality due to malignant tumors among subjects exposed to styrene. Increased frequency of aberrant peripheral lymphocytes was found in workers exposed to styrene. (46 Refs) (In CZE)

17. BIOLOGICAL EFFECTS OF TREMOLITE.

Wagner JC, Chamberlain M, Brown RC, Berry G, Pooley FD, Davies R, Griffiths DM
MRC Pneumoconiosis Unit, Llandough Hosp., Penarth, S. Glam. CF6 1XW, Wales
Br J Cancer; 45(3):352-360 1982

Tremolite is an amphibole which has been implicated in a variety of disease patterns in different parts of the world. It occurs in a number of phases, which are chemically identical but have specific physical characteristics. In an attempt to clarify the epidemiological findings, tremolite fibers of three specific forms - A, B and C- were characterized and studied for biological activity by: (i) in vivo intrapleural injection of rats (2 separate experiments -1 with poor survival). (ii) in vitro enzyme release from mouse peritoneal macrophages. (iii) in vitro giant-cell formation in A549 cultures, (iv) in vitro cytotoxicity for V79-4 cells. Sample C, which contained more long thin fibers than A and B, was alone in producing mesotheliomas. C, but not A or B, induced LDH and B-glucuronidase enzyme release, and induced giant cells. A was not cytotoxic, B moderately cytotoxic and C as highly cytotoxic as UICC crocidolite. The in vivo studies were marred by being split between two experiments, of which the second had poor survival. We are aware of the weakness of our in vivo data, but as Tremolite C was being considered for commercial use on the European market we felt it timely to submit our findings for publication. (Author abstract) (25 Refs)

18. MORTALITY AMONG DANISH INSULATION WORKERS DURING THE PERIOD 1970-1975.

Petersen R, Venstrup-Nielsen SE
Socialmedicinsk institut, Vesterbro Torv 1-3, DK-8000 Arhus C, Denmark
Ugeskr Laeger; 144(13):967-970 1982

Mortality and causes of death were analyzed in a cohort of 953 men who were known to be insulation workers in 1970, and the data obtained were compared to those for all occupationally active men in Denmark. The mortality rate due to cancer of the larynx and lungs was increased 2.4 times in the insulation workers. The mortality due to diseases of the diagnostic group which includes pleural mesothelioma was 63 times higher among the insulation workers than in the occupationally active male population. (15 Refs) (In DAN)

19. BIOLOGICAL EFFECTS OF MINERAL WOOL.

Petersen R, Ehrhorn H, Mousing K, Sabroe S, Silberschmid M, Venstrup-Nielsen SE
Socialmedicinsk institut, Vesterbro Torv 1-3, DK-8000 Arhus C, Denmark
Ugeskr Laeger; 144(13):971-975 1982

A review of the biological effects of mineral wool shows the carcinogenic effect of mineral fibers injected intrapleurally and ip to experimental animals. The effect was found to be related to the shape rather than to the chemical composition of the fibers; fibers with diameters of less than approx 1 micron (u) and with lengths greater than approx 10 u were most potent. Epidemiological studies demonstrated no increase in mortality due to lung cancer among mineral wool production workers, which may have been due to short-term exposure to predominantly thick fibers. (30 Refs) (In DAN)

20. DISEASES CAUSED BY EPOXY RESINS.

Konietzko H, Fischer G
Institut fur Arbeits- und Sozialmedizin, Johannes-Gutenberg-Universitat, Obere Zahlbacher Strasse 67, D-6500 Mainz, W. Germany
Zentralbl Arbeitsmed Arbeitsschutz Proph; 32(3):86-91 1982

Occupational hazards from epoxy resins (ER) are reviewed. The chemical characteristic common to ER is based on the reactivity of epoxy groups. ER can induce toxic irritative or allergic reactions in exposed skin or lung tissue. Resorptive damage to internal organs is not a risk. Under normal working conditions mutagenic or carcinogenic effects have not been reported and are unlikely. Animal studies have demonstrated teratogenic effects; pregnant women should therefore not be exposed to ER in the workplace. (95 Refs) (In GER)

21. 2-CHLOROTOLUENE; RESPONSE TO THE INTERAGENCY TESTING COMMITTEE.

Gorsuch AM
(c/o D. G. Bannerman) Industry Assistance Office (TS-799), Office of Toxic Substances, Environmental Protection Agency, Room E-511, 401 M St., SW, Washington, DC, 20460
Fed Regist; 47(82):18172-18175 1982

In the Eighth Report of the Interagency Testing Committee [ITC], transmitted to the Administrator of the EPA on April 24, 1961, the Committee designated the chemical 2-chlorotoluene for testing considerations. Following publication of the

ITC report and a public meeting on June 16, 1981, the sole American manufacturer of 2-chlorotoluene, Hooker Chemicals and Plastics Corporation, presented to the EPA plans for testing its health and environmental effects. The Agency has discussed the planned testing with Hooker and, after an opportunity for public review and comment, decided to accept the program. Consequently the EPA is not, at this time, proposing a section 4(a) rule to require health or environmental effects testing of 2-chlorotoluene. (Author abstract) (no Refs)

22. ETHMOIDONASAL ADENOCARCINOMAS IN WOOD WORKERS. CLINICAL AND FORENSIC ASPECTS.

Duclos JC, Debreuil C, Guinchard R, Arnould G
Institut Universitaire de Medecine du Travail de Lyon, Lyon, France
Arch Mal Prof; 42(5):292-294 1981

Tumors of the ethmoid were diagnosed in 180 patients, including 61 exposed occupationally to wood dust. Adenocarcinoma was diagnosed in 90/180 patients and in 57/61 wood workers. The av length of exposure to wood dust was 36 yr. The av age of the 61 patients was 57 yr. Domestic and exotic hard wood dusts are assumed to cause chronic irritation and metaplasia of the nasal mucosa. The relationship between occupational exposure to wood dust and the development of ethmoidonasal adenocarcinoma is an established fact. (no Refs) (In FRE)

23. CANCER OF THE ETHMOID. ROLE OF EXPOSURE TO WOOD DUST AND CLINICAL ASPECTS. (REPORT OF 61 CASES OF ADENOCARCINOMA OF THE ETHMOID AT INSTITUTE GUSTAVE-ROUSSY).

Marandas P, Schwaab G, Lecointre F, Pene F, Vanderbrouck C
Institut Gustave-Roussy, rue Camille Desmoulins, 94800 Villejuif, France
Arch Mal Prof; 42(5):294-300 1981

Cancer of the ethmoid was diagnosed in 112 patients during the period 1961-1979, accounting for 0.7% of all cancers of the ear-nose-throat region. Adenocarcinoma was diagnosed in 61 patients (59 men and 2 women, 37-88 yr old), epidermoid epithelioma in 22, cylindroma in 8, olfactory esthesioneuroma in 6, hematosarcoma in 5 and other malignant tumors in 10. The 61 patients with ethmoid adenocarcinomas included 35 patients who were exposed occupationally to wood dust in closed spaces. The length of exposure was 5-10 yr in 6 cases, 10-20 yr in 5, 20-30 yr in 3, 30-40 yr in 4, 40-50 yr in 12 and more than 50 yr in 5. The interval between first exposure to wood dust and diagnosis of the tumor averaged 41 yr. Tannins and tannic acid are considered to be the carcinogenic factor in the wood workers. Isolated nasal symptoms were found in 33/61 patients with adenocarcinomas. The tumor was demonstrated by anterior rhinoscopy in most cases. Treatment consisted of surgical excision followed by external radiotherapy in 34/61 cases, excision only in 8, excision followed by curietherapy in 7, external radiotherapy only in 8, preoperative radiotherapy, surgery and external radiotherapy in 1, external radiotherapy, surgery and curietherapy in 1, and chemotherapy only in 2. Local recurrences were seen in 32/61 patients, all of whom were treated again surgically, 27 of them with curative intent. The 3-and 5-yr survival rates were 65% and 48%, respectively. (27 Refs) (In FRE)

24. ADENOCARCINOMA OF THE ETHMOID AND NASAL FOSSAE IN WOOD WORKERS. REPORT OF 18 CASES.

Gaillard L, Champeix J, Catilina P, Mafaye M, Pottecher G, Chamoux A
No affiliation given
Arch Mal Prof; 42(5):300-302 1981

Adenocarcinoma of the ethmoid and nasal fossae was diagnosed in 18 patients exposed occupationally to wood dust. Rhinologic antecedents (long-term nasal obstruction or epistaxis) were seen in 4/18 cases. The length of exposure was 20-25 yr in six cases and did not exceed 30 yr in 78% of all cases. The interval between the end of exposure and diagnosis was up to 30 yr. All patients were subjected to surgery, but 12% of them developed locoregional recurrences. The six other patients have a chance of long-term survival and possibly cure. (no Refs) (In FRE)

25. A HISTORICAL PROSPECTIVE MORTALITY STUDY OF WORKERS IN COPPER AND ZINC REFINERIES.

Logue JN, Koontz MD, Hattwick MA
Epidemiologic Studies Branch (HFX-130), Div. Biological Effects, Bureau of Radiological Health, United States Food and Drug Admin., Rockville, MD, 20857
JOM; 24(5):398-408 1982

Earlier health studies of workers in electrolytic refinery operations have raised concern that workers may experience excess morbidity and premature death as a result of hazardous occupational exposures. This study was designed to determine if the refinery operation is associated with any excess mortality patterns. A cohort of 4,802 male workers exposed for at least 1 year during 1946-1975 was assembled from nine US zinc and copper refineries. Vital status was ascertained for 4,241 (88%) of the cohort. Death certificates were obtained for 84% (355/423) of the deceased. Overall standard mortality ratios (SMRs) were calculated to be 92 for the cohort, 97 for the subgroup of copper refinery workers, and 83 for the subgroup of zinc refinery workers. Significantly high cause-specific SMRs were as follows: (1) cerebrovascular disease (CBVD) for the cohort; (2) all cancers, cancer of the digestive tract, and CBVD for the copper subgroup; (3) all cancers, cancer of the respiratory tract, and CBVD for one plant for demonstrated a significantly high overall SMR (133). The significant excess of cancer deaths among the study cohort is largely due to the plant that exhibited the significantly high overall mortality rate, but lack of smoking data qualifies this finding. The significant excess of CBVD seems to be consistent across plants and further research seems warranted to verify the finding. (Author abstract) (32 Refs)

26. ASBESTOSIS IN LONG-TERM EMPLOYEES OF AN ONTARIO ASBESTOS-CEMENT FACTORY.

Finkelstein MM
Special Studies and Services Branch, Ontario Ministry Labor, 400 University Ave., Toronto, Ontario M7A 1T7, Canada
Am Rev Respir Dis; 125(5):496-501 1982

We studied the development of compensable (certified) asbestosis among the 201 workers at an asbestos-cement factory who were first exposed to asbestos dust prior to 1960 and who had been employed at least 15 yr. By July 1980, 39% of the production workers and 20% of the maintenance workers had developed a compensable chest disability; the 'latent interval' generally exceeded 20 yr. Workers with asbestosis were found to have markedly elevated mortality rates with deaths caused

by malignancies and respiratory disease being primarily responsible. We combined the limited air sampling data available with individual work histories to calculate 18-yr cumulative fiber exposures. The cumulative probability of certification was related to the cumulative exposures and the exposure-response relationship was found to be sigmoidal in form. (Author abstract) (7 Refs)

27. POLYCYCLIC AROMATIC HYDROCARBONS IN ONTARIO FOUNDRY ENVIRONMENTS.

Verma DK, Muir DC, Cunliffe S, Julian JA, Vogt JH, Rosenfeld J, Chovil A
Occupational Health Program, McMaster Univ., Hamilton, Ontario, Canada
Ann Occup Hyg; 25(1):17-25 1982

Polycyclic aromatic hydrocarbon (PAH) and metal concentrations were assessed in ferrous and nonferrous foundry environments. Max concentrations of various PAH compounds, including suspected carcinogens, ranged from 0.09-12.93 umole/cubic meter (m3) and 9.48-26.59 umole/m3 in personal and area sampling, respectively. The threshold limit values for iron, lead, and copper were exceeded 1, 2, and 3x, respectively, in 126 samples. Significant variation in PAH concentration could not be correlated with various foundry occupations. Higher concentrations of PAH were discovered in ferrous than in nonferrous foundrys. (26 Refs)

28. DO PHENOXY HERBICIDES CAUSE CANCER IN MAN?

Coggon D, Acheson ED
(c/o Acheson) MRC Environmental Epidemiology Unit, Southampton General Hosp., South Academic Block, Southampton SO9 4XY, England
Lancet; 1(8280):1057-1059 1982

Two Swedish case-control studies have shown an increased risk of soft-tissue sarcomas in men exposed to phenoxy herbicides and chlorophenols during their application. A high incidence of soft-tissue sarcomas has also been observed among workers employed in the manufacture of these products in the USA. Other studies have failed to demonstrate this association. A third case-control study in Sweden suggests that phenoxy acids and chlorophenols may also predispose to Hodgkin's disease and non-Hodgkin's lymphoma, but as yet there is little support for this theory from other sources. Further research is urgently needed to confirm or refute these associations, to define the extent of the risk (if any), and to identify the carcinogen(s). (Author abstract) (31 Refs)

29. OCCUPATIONAL EXPOSURE TO SYNTHETIC ESTROGENS. SOME METHODOLOGICAL PROBLEMS.

Harrington JM
Faculty Medicine, Univ. Birmingham, Birmingham B15 2TJ, England
Scand J Work Environ Health; 8(Suppl1):167-171 1982

Occupational exposure to estrogenic agents and methodological problems in measuring outcome and exposure are discussed. For some sex hormones, causative links with human cancer have been discovered. The clinical effects of estrogen exposure obviously vary depending on the sex of the exposed workers, but the main features are gynecomastia, loss of libido, and impotence in the male, and menstrual disorders in the female. Most investigations have concentrated on breast enlargement as the clinical index of significant estrogen absorption. Biochemical effects include measurement of exogenous estrogen, the estimation of other, secondary, hormonal effects, and estimation of liver, adrenal, and thyroid function for exclusory causes of gynecomastia or menstrual disorders. Specific measures of estrogen absorption and effect could be restricted to direct measurement of exogenous estrogens by radioimmunological assay, direct measurement of luteinizing hormone, follicle-stimulating hormone, testosterone, and possible measurement of sex hormone binding globulin. Hormone-in-air levels require considerable care in collection. Attention must be paid to the work cycle, and personal samplers should be used in preference to area or wipe sampling. A protocol is suggested which might address some of the presented methodological issues and thereby improve the accuracy of the study and allow a better assessment of the dose-effect relationship. If better assessment can be achieved, then a 'safe' level of estrogen in air could be suggested with some measure of confidence. (16 Refs)

30. EPIDEMIOLOGY OF INDUSTRIAL BLADDER CANCER IN WEST YORKSHIRE (MEETING ABSTRACT)

Cartwright RA, Glashan RW
Yorkshire Regional Cancer Organization, Cookridge Hospital, Leeds, England
Br J Cancer; 44(2):277 1981

This paper presents some preliminary results from a case-control study currently underway in parts of West Yorkshire. To date 1015 cases and 1288 controls have been analyzed. Of these 72 cases and 37 controls were employed for at least 6 months in the chemical industry, giving a maximum-likelihood estimation of the risk ratio as 3.1 (95% confidence limits of 1.9-3.8). Other trades whose work brought them into contact with the chemical industry have an excess of bladder cancer cases among them, at a ratio of 2.5. Process workers associated with the dye-manufacturing industry, who form a substantial proportion of chemical workers, have a higher risk still of bladder cancer (4.5). The case-control interviewing approach of this study makes it possible to estimate how other determinants of bladder cancer influence the risks for such hazardous occupations. Process workers who smoke have a risk ratio of nearly 6 while non-smoking process workers have a lower and statistically insignificant risk. (no Refs)

OCCUPATIONAL FACTORS: GENERAL

31. CANCER-ENVIRONMENT REGISTRY DATA INSUFFICIENT FOR ANALYSIS OF POSSIBLE RELATIONSHIP BETWEEN PARENT'S OCCUPATION AND TUMORS IN THEIR CHILDREN.

Berglund K, Iselius L, Lambert B, Lindsten J, Ludvigsson J, Stjernfeldt M
Statens mijlomedicinska laboratorium, Stockholm, Sweden
Lakartidningen; 79(15):1484-1487 1982

Data in the cancer-environment registry were analyzed to identify the cancer frequency in different occupational groups. It was not possible to analyze the frequency of malignant diseases among children as a function of their parent's occupation due to lack of appropriate data in the cancer registry. The standardized morbidity rates (SMR) in men were found to be increased after mass significance analysis for cancer of the lips, tongue, salivary glands, floor of mouth and larynx in workers (rubber industry); for cancer of the esophagus and gastrointestinal tract in engineers and technicians exposed to chemicals;

for cancer of the biliary tract, liver and pancreas in bookkeepers, cashiers, motor vehicle operators, barbers and beauticians; for cancer of the nose, paranasal sinuses, middle ear, trachea, bronchi, lungs and pleura in chemists, pharmacists, bookkeepers, cashiers, gasoline station attendants, motor vehicle operators, painters, printers, workers (rubber industry), barbers and beauticians; for cancer of the kidneys and urinary tract in engineers and technicians exposed to chemicals, bookkeepers, cashiers, typists, workers (rubber and leather industries), barbers and beauticians; for cancer of skin (including melanoma) in bookkeepers, cashiers, bank employees and workers (leather industry). In women the SMR were increased for cancer of the esophagus and gastrointestinal tract among bookkeepers, cashiers and bank employees; for cancer of the kidneys and urinary tract among secretaries, stenographers, typists and pharmacists, and for cancer of the skin (including melanoma) among secretaries, stenographers and typists. (15 Refs) (In SWE)

32. PROPHYLAXIS OF LUNG CANCER.

Napalkov NP
No affiliation given
Vopr Onkol; 28(2):10-15 1982

Approaches to lung cancer (LC) prevention are outlined, with special emphasis on the role of environmental and occupational pollutants in the etiology and pathogenesis of LC. The increase of LC morbidity is associated with significant growth and development of chemical industry. Following factors were shown to play a role in the etiology of LC: arsenic and its derivatives, chromium and its derivatives, industrial purification of nickel, hematite mining, asbestos, bis-chloromethyl ether, mustard gas, pyrolysis products, and ionizing radiation. The risk of LC was directly related to the cigarette consumption. The carcinogenic effect of cigarette smoke was shown in the animal experiments. Post-mortem examination of smokers showed marked metaplastic changes in the bronchi. It was suggested that LC control and prevention should include active anti-smoking campaign, follow-up of the patients with precancerous chronic lung diseases, and ban on production and use of industrial carcinogens. (18 Refs) (In RUS)

33. THE ASSOCIATION OF OCCUPATION AND INDUSTRY WITH MORTALITY IN RHODE ISLAND (1968-1972).

Gute DM
Rhode Island Dept. Health, Providence, RI
The Association of Occupation and Industry with Mortality in Rhode Island (1968-1972). Available from National Technical Information Service, Springfield, VA, as HRP-0903529/6:, 144 pp., 1981.

In recognition of the importance of occupational health as a problem area, this study was undertaken to begin to target in as effective a manner as possible, scarce occupational health resources. The analysis attempts to identify occupations and industries which may place workers at increased risk of specific causes of death. Data was obtained from the records of approximately 43,000 Rhode Island decedents during the years 1968-1972. The results of the Rhode Island study are reported by sex, age occupation group, industrial group, and cause of death. The study found, for males, an increased risk of chronic obstructive lung disease among textile workers, an excess of accidental death among construction workers and an increase in lung cancer for construction craftsmen, transport operatives, cleaning service workers, and metal craftsmen. For females, the finding of particular interest is the risk of stomach cancer among workers in the jewelry industry. Further study and analytic research should be performed in these areas. Several historic occupation mortality studies are reviewed and the different methodologies used in these studies are described. Tables and figures are used to present the data. References are included at the end of each chapter. The appendices contain related data. (Author abstract)

34. USE OF THE CANADIAN MORTALITY DATA BASE FOR EPIDEMIOLOGICAL FOLLOW-UP.

Smith ME, Newcombe HB
Occupational and Environmental Health Unit, Vital Statistics and Disease Registries Section, Statistics Canada, 17th Floor, R.H. Coats Building, Tunney's Pasture, Ottawa, Ontario, K1A OZ5, Canada
Can J Public Health; 73(1):39-46 1982

The Canadian Mortality Data Base (CMDB) contains all Canadian death registrations dating from 1950. The CMDB contains personal identifying information, is machine-readable and in microfiche and microfilm form, and is sequenced and consolidated to facilitate manual searching. Several follow-up studies have been performed for various 'at-risk' groups, including infant death-birth linkages, isoniazid and cancer in tuberculosis patients, a 10% sample of the Canadian labor force, and fluoroscopy and cancer in tuberculosis patients. Searches presently in progress involve nickel workers, uranium workers, Ontario workers, particularly miners, Nutrition Canada Survey participants, Ontario morticians, who have high levels of exposure to formaldehyde, railway workers, childbearing women and breast cancer, Alberta cancer files, and fluospar mining in Newfoundland. Several other searches involving the data base are under negotiation, including radiation-exposed workers. The CMDB has the potential for other searches involving individual linear follow-up to investigate health problems associated with diet, food additives, pharmaceuticals, water supply, and workplace conditions. The system is economical and need not threaten personal privacy. (46 Refs)

EPIDEMIOLOGICAL FINDINGS INVOLVING SPECIFIC AREAS

35. 'CIVILIZATION-ASSOCIATED' DISEASES IN EUROPE AND INDUSTRIAL COUNTRIES OUTSIDE OF EUROPE: REGIONAL DIFFERENCES AND TRENDS IN MORTALITY.

Junge B, Hoffmeister H
Inst. Social Medicine and Epidemiology, Federal health Office, Postfach, D-1000 Berlin 33, W. Germany
Prev Med; 11(2):117-130 1982

Death rates and changes in death rates from 1958-1976 for the leading causes of mortality, including cancer, are described for 26 countries. The United States (US), Canada, and Australia experienced a reduced rate of stomach cancer mortality compared to Japan, Portugal, and Eastern European countries. Mortality from lung cancer (average of all countries considered) rose by 40 deaths per 100,000 for men and by 10 deaths per 100,000 for women. Lung cancer rates in England and Wales, the US, Denmark, Canada and Australia increased three to four-fold in 18 yr. (35 Refs)

36. CANCER IN THAILAND: LESSONS FOR CANCER CONTROL.

Miller DG, Sombooncharoen S
Strang Clinic, Preventive Medicine Inst., 55 East 34th St., New York, NY, 10016
Prev Med; 11(2):232-239 1982

Patterns of neoplasia encountered in Thailand are discussed and the implications of the cancer control program of Thailand for cancer control in the United States are reviewed. Cancer was the sixth most common cause of mortality in Thailand in 1970. By 1977 it ranked third after accidents and cardiopulmonary disease. Cancer patients in Thailand, as elsewhere, utilize a disproportionately large fraction of available medical care. In 1975, liver, lung, and stomach in the male and cervical, breast, and liver in the female were the most common malignancies reported by 85 collaborating rural hospitals. In contrast, the most common cancers in urban Thais included nasopharyngeal, oral and lung in the male, and cervical, oral and lung in the female. The Thai program for cancer control indicates that (1) there is no effective cancer control without early diagnosis; (2) the detection of early cancer requires special effort; (3) the premise that screening programs should be directed exclusively at asymptomatic patients should be reexamined; (4) screening programs without follow-up are counterproductive; (5) screening programs will be most successful when linked with ongoing activities that represent a desired social or medical benefit; (6) totally integrated health care services offer the best opportunity for cancer control; (7) Cancer control services should be incorporated into programs offering comprehensive health care; (8) volunteer resources should be tapped to the extent that they are available; (9) environmental hazards should be eradicated; and (10) commercial marketing practices may affect cancer control. (8 Refs)

37. TRENDS IN CHILDHOOD LEUKAEMIA IN BRITAIN 1968-1978.

Stiller CA, Draper GJ
Childhood Cancer Res. Group, Univ. Oxford, Oxford OX2 6HE, England
Br J Cancer; 45(4):543-551 1982

Analysis of recent cancer registrations from Great Britain suggests that there has been an increase in the incidence of childhood acute lymphoid leukemia for children born after about 1964. The increase is statistically significant for boys aged 0-4 yr, and a lesser increase may also have occurred for girls in this age group. Reasons are given for believing that the increase is not purely an artifact attributable to improved registration procedures. Registration data from the Manchester Children's Tumor Registry, Denmark and Sweden support the suggestion that an increase has occurred. It is not at present possible to say whether a change in incidence will also be seen at higher ages or will be confined to the youngest children, who may represent an etiologically distinct sub-group. There is no obvious explanation for the findings reported here. (Author abstract) (16 Refs)

38. EPIDEMIOLOGIC AND AGE-DEPENDENT DATA ON MULTIPLE MYELOMA IN AUSTRIA.

Ludwig H, Fritz E, Friedl HP
Dept. Medicine II, Univ. Vienna, Vienna, Austria
JNCI; 68(5):729-733 1982

The mortality rates for multiple myeloma showed an increasing trend between 1969 and 1979, when multiple myeloma accounted for 6% of the reported cancer deaths in Austria. The median age of diagnosis was relatively high: 68.5 years for males and 69.0 years for females. The age-corrected male:female ratio of 1.23:1 indicated a higher incidence of multiple myeloma in males. Age-standardized (standard population for Europe) incidence rates amounted to 1.5/100,000 male inhabitants and 1.2/100,000 female inhabitants/year. In a subsample of patients with multiple myeloma, the paraprotein types as well as the kappa:lambda ratio resembled the frequency distribution of normal immunoglobulins. There were no age-related differences for the stages of the disease and the poor risk factors at diagnosis for patients 65 years old or younger or for those over 65 years of age at diagnosis. Survival rates were significantly higher for younger patients than for older ones, with a 50% survival time of 45 and 26 months, respectively. The differences resulted solely from the dissimilar general life expectancies in both groups, and survival rates with strict regard to multiple myeloma proved to be identical in younger and older patients. (Author abstract) (12 Refs)

39. FREQUENCY AND SIGNIFICANCE OF THYROID DISEASES IN EAST GERMANY.

Knappe G
Klinik fur Innere Medizin der Charite, Humboldt-Universitat Berlin, Berlin, E. Germany
Radiol Diagn (Berl); 23(1):90-92 1982

The frequency and economic significance of thyroid diseases in the German Democratic Republic are presented for the yr 1974. The most frequent disorder was nontoxic goiter, which caused loss to the economy of 500,000 worker-days. Malignant tumors caused a loss of 10,747 workers. Hospitalization was generally longer for patients with malignant tumors than for patients with nonmalignant diseases. (1 Ref) (In GER)

40. STUDIES OF CANCER EPIDEMIOLOGY IN THE UNITED STATES OF AMERICA.

Lapin IuE
Moscow, USSR
Feldsher Akush; (2):55-57 1982

Epidemiological data on the cancer morbidity and mortality in the United States of America are briefly reviewed with special emphasis on the role of diet, smoking, drugs, and industrial exposure in cancer etiology. The effects of certain exogenous risk factors are correlated with the social-economic status. (no Refs) (In RUS)

41. CAROTID BODY TUMORS IN HUMANS: GENETICS AND EPIDEMIOLOGY.

Parry DM, Li FP, Strong LC, Carney JA, Schottenfeld D, Reimer RR, Grufferman S
Clinical Epidemiology Branch, Div. Cancer Cause and Prevention, NCI, NIH, Public Health Services, Landow Building, Room 5A21, Bethesda, MD, 20205
JNCI; 68(4):573-578 1982

Genetic factors in the etiology of carotid body tumors (CBT) were sought in a medical record review of 222 histologically diagnosed cases at 12 US medical centers. Patients in the series, which had a marked female predominance (146 females:76 males), usually developed tumors between the fourth and seventh decades of life (mean, 44.7 yr). In 16 patients who also had other extra-adrenal paragangliomas, suggesting a multiple primary tumor syndrome, CBT were diagnosed significantly earlier (mean, 35.4 yr; p less than 0.01). The occurrence of thyroid cancer in five other patients appeared to be excessive. Familial CBT was recognized in 16 patients from 13 af-

fected families, including 9 newly ascertained kindreds. Compared with nonfamilial lesions, familial CBT tended to develop bilaterally (38% vs 8% unilaterally) and at slightly earlier ages (41.6 vs 44.9 yr). CBT was reported to occur in an autosomal dominant pattern in some families and within sibships in others; relatives were not examined for confirmation. The familial findings are generally consistent with a two-step mutation model of the development of hereditary and nonhereditary CBT; apparent deviations from the model might be clarified with additional data on this rare neoplasm. (Author abstract) (35 Refs)

42. WORK-RELATED DISTRIBUTION OF TUMORS IN SARDINIA. AN EPIDEMIOLOGIC STUDY.

Serra A, Cossu F
Cattedra di Ottica Fisio-patologica, Universita di Cagliari, Cagliari, Italy
Atti Fond Giorgio Ronchi; 36(5/6):793-794 1981

The incidence of cancer (IC) in people working outdoors (PWO) was compared with people working indoors (PWI) in Sardinia where exposure to sun is considerable. Distribution was the same for people less than 30 yr old. The IC for PWO was 46% for 31-40 yr old, 55% for 41-50 yr old, 60% for 51-60 yr old, 67% for 61-70 yr old, and 76% for greater than 71 yr old. The IC for PWI was 54% for 31-40 yr old, 45% for 41-50 yr old, 40% for 51-60 yr old, 33% for 61-70 yr old, and 24% for greater than 71 yr old. Incidence of skin cancer was 69% for PWO and 31% for PWI. (2 Refs)

43. LUNG CANCER IN NORWAY. A REVIEW BASED ON CANCER REGISTRY DATA.

Kvale G, Johansen A
Institutt for hygiene og sosialmedisin, Universitetet i Bergen, 5016 Haukeland, Norway
Tidsskr Nor Laegeforen; 102(8):480-484 1982

Epidemiological data on lung cancer in Norway during the period 1973-1977 were analyzed. The age-adjusted incidence rates (per 100,000 population per yr) were 37.3 in men (0.5 in the age group 0-39 yr, 16.9 in 40-49, 65.9 in 50-59 yr, 149.7 in 60-69 yr and 179.7 in 70+ yr) and 7.7 in women (0.4 in the age group 0-39 yr 6.1 in 40-49 yr, 16.6 in 50-59 yr, 25.2 in 60-69 yr and 30.6 in 70+ yr). Compared with the 1953-1957 period, the incidence rates have almost tripled for men and doubled for women. The increase has affected all principal histological types and has been most pronounced among young women while there has been a stabilization or even a possible decrease among young men. Great regional variations were observed, but the incidence rates were found to be nearly twice as high in urban than in rural areas, and were consistently higher for men than for women. A comparison of the incidence rates with the smoking habits shows a correlation between increasing cigarette consumption and increasing incidence rate among young women. (13 Refs) (In NOR)

44. CURRENT LUNG CANCER MORBIDITY AND MORTALITY INDICES IN USSR AND ABROAD.

Merabishvili VM, Tserkovnyi GF, Demidov VP
No affiliation given
Vopr Onkol; 28(2):15-18 1982

Lung cancer (LC) morbidity and mortality indices in the Soviet Union are discussed. LC ranks second in the overall cancer morbidity and ranks first in cancer morbidity in men. Progressive increase of LC morbidity was recorded in the urban and in the rural populations. During the 1970-1978 period, LC morbidity in urban population showed a 27.7% increase, compared with 43% increase in the rural population. The highest morbidity indices (per 100,000) were recorded in the Estonian SSR (35.4), Ukrainian SSR (34.3), RSFSR (32.3), Lithuanian SSR (31.3), and Latvian SSR (30.2). In 1978, LC morbidity in men was 53.5, compared with 7.2 in women. The highest morbidity indices were recorded in 60-69 and greater than 70 yr age groups (319.2 and 288.1, respectively, in men and 40.0 and 46.2, respectively, in women). LC morbidity and mortality indices were comparable to those recorded in majority of European countries. (9 Refs) (In RUS)

45. INFLAMMATORY BOWEL DISEASE IN AUCKLAND, NEW ZEALAND.

Eason RJ, Lee SP, Tasman-Jones C
32 Wendover Road, Glendowie, Auckland, New Zealand
Aust NZ J Med; 12(2):125-131 1982

Four-hundred-and-fifty-six patients with ulcerative colitis (UC) and 137 patients with Crohn's disease (CD) attended public hospitals within Auckland between 1969 and 1978. Polynesians comprised 15% of the population at risk but accounted for only 0.4% of UC cases and no CD cases. Annual incidence rates were 5.4/100,000 caucasians for UC and 1.75 for CD. CD was significantly less common in Auckland than in European and North American centers. For patients presenting for the first time between 1969 and 1978, the cumulative probability of surviving 10 yr was 93.9% for UC and 89.1% for CD. An excess of observed over expected mortality was limited to the 1st yr of observation UC and did not occur in CD. Clinical features and local complications of UC and CD have been correlated with the anatomic location of disease. In this first clinical study of inflammatory bowel disease in New Zealand, 61% of CD and 23% of UC patients required at least one surgical resection. (Author abstract) (26 Refs)

46. OCCUPATIONAL MORTALITY IN THE ARMED SERVICES.

Blackburn PJ
Ministry of Defence (AMO 5), First Avenue House, High Holborn, London, England
J Soc Occup Med; 32(1):15-19 1982

Occupational mortality data for the British armed services are discussed. Standardized mortality ratios (SMR) for coronary disease and lung cancer are lower for Navy and Air Force personnel than for the civilian population. Ministry of Defence SMR for all causes except accidental death were lower than other reported service SMR. Areas of concern are deaths from accidents and ischemic heart disease. (6 Refs)

47. SOME EPIDEMIOLOGICAL ASPECTS OF TESTICULAR CANCER IN ENGLAND AND WALES (MEETING ABSTRACT)

Davies JM
Division of Epidemiology, Institute of Cancer Research, Sutton, Surrey, England
Br J Cancer; 44(2):277 1981

In 1901 testicular cancer was a rare disease in this country, and death rates showed a typical peak in old age. Since then incidence and mortality rates among young men have risen dramatically and now show a marked peak around age 30; rates are still rising. Successive birth cohorts of men born from 1871 to 1951 had steadily increasing death rates up to age 45, and today testicular cancer is the commonest neoplasm regis-

tered among men aged 20-34. The disease is becoming more common in Western countries generally (especially in Denmark), but little is known about its etiology or the reasons for the increasing incidence. In 1971 mortality was highest among professional, administrative and clerical workers and lowest among manual workers, but differential social-class rates were already apparent in 1921 and 1931. USA data also show the disease to be most common among professional men. National mortality data covering 1957-61 suggest that testicular cancer is more common among single than married men, but evidence from the USA on this aspect is conflicting, and further research is needed. (no Refs)

48. INCIDENCE OF MELANOMA IN NEW SOUTH WALES (MEETING ABSTRACT)

McCarthy WH
The University of Sydney, Sydney, Australia
Workshop Seminar Epidemiology of Melanoma, August 1-2, 1981, Brisbane, Australia University of Queensland; 1981

A comprehensive survey of the incidence of melanoma in New South Wales from 1970 to 1976 was undertaken. All pathology services in New South Wales were visited and the relevant data on all patients obtained. A random sample of 500 of the 5,000 patients was taken for histopathological assessment of the tumors removed. Survival data was recorded for each of the patients in this random sample. The data presented includes the epidemiology of melanoma in New South Wales, an analysis of the histopathology as revealed by the random sample and the relationship of survival to histopathology. (no Refs)

49. EPIDEMIOLOGY OF STOMACH CANCER IN SAN MARINO AND IN EMILIA-ROMAGNA.

Baldi E, Salerno Mele P, D'Imperio N, Mularoni E
Istituto di Patologia Medica e Medicina del Lavoro, Universita di Bologna, Bologna, Italy
G Clin Med; 62(11):782-788 1981

Statistics of incidence of gastric cancer (GC) in the population of Republic of San Marino (SM) and in the Italian region of Emilia-Romagna (ER) were compared. Endoscopic examinations were performed in 1,000 patients in SM and in 10,000 in ER. In SM 40 of the patients (23 men, 17 women) had GC and in ER an incidence of 4% and 2.37%, respectively, was found in 237 patients. (15 Refs) (In ITA)

OTHER EPIDEMIOLOGICAL FINDINGS

50. AGE DISTRIBUTION OF RIGHT- AND LEFT-SIDED COLORECTAL CANCERS.

Slater G, Papatestas AE, Tartter PI, Mulvihill M, Aufses AH
Dept. Surgery, Mount Sinai Medical Center, One Gustave L. Levy Place, New York, NY, 10029
Am J Gastroenterol; 77(2):63-66 1982

The age distributions in different anatomic areas of the colorectum were compared in 410 patients. The av age for patients with right-sided cancers (71.3 yr) was significantly higher than that for patients with left-sided cancers (67.5 yr). In addition, there was a significantly higher percentage of patients over the age of 70 (mean age of the whole group) in the right colon group as compared with the left colon group. It was concluded that the older age distribution of right-sided cancers might be explained by the delayed effect of an environmental carcinogen in a population with a longer life expectancy. (Author abstract) (27 Refs)

51. PATHOGENESIS OF GESTATIONAL TROPHOBLASTIC NEOPLASMS.

Berkowitz RS, Goldstein DP
New England Trophoblastic Disease Center, Boston Hosp. for Women, Boston, MA, 02115
Pathobiol Annu; 11:391-411 1981

Epidemiology, presenting signs and symptoms, and natural history of molar pregnancy (MP), locally invasive trophoblastic disease (TD), metastatic TD, clinicopathological correlations, and the role of human chorionic gonadotropin (HCHG) in TD are discussed. The reported incidence of MP significantly varies in different regions of the world. The frequency of hydatidiform mole (HM) in Asian nations is 7-10x greater than the reported incidence in North America or Europe. Presenting signs and symptoms of the first 306 patients with MP who were treated at the New England Trophoblastic Disease Center are summarized. HM are well recognized to have a potential for local invasion and distant metastasis. Consecutive molar gestations in the same individual have been reported. Recurrent MP was associated with worsening trophoblastic histology and increased incidence of proliferative trophoblastic complications in the successive episodes of HM. HM may be categorized as either a classic or partial mole based on gross morphology, histopathology, and karyotype. Classic moles have generalized hydatidiform swelling of the villi and no associated embryonic or fetal tissues. Locally invasive trophoblastic tumors (TT) occur in approx 15% of patients after molar evacuation and less frequently following other pregnancies. Trophoblastic tissue metastasizes in approx 5% of patients after molar evacuation and infrequently following other gestational events. Patients with a marked cellular reaction to their TT had a greater opportunity for prolonged survival. All patients with TT have elevated HCHG that are proportional to the number of viable tumor cells. (50 Refs)

52. ETIOLOGY OF MOUTH AND LIP TUMORS.

Zabezhinskii MA, Godorozha PD
N. N. Petrov Res. Inst. Oncology, Leningrad, USSR
Vopr Onkol; 28(2):105-113 1982

Literature data on the etiology of mouth and lip cancers are reviewed. Pathogenesis of mouth neoplasms is associated with the exposure to various chemical, physical, and biological carcinogenic factors alone or in combination with the modifying factors. The increased incidence of mouth cancer can be caused by smoking, tobacco chewing, exposure to polycyclic aromatic hydrocarbons, alcohol consumption, and exposure to pesticides. Physical carcinogens include UV, x rays, and sunlight. Experimental data indicate that herpes virus and polyoma virus can induce adenomas and adenocarcinomas of mouth mucosa. Poor hygiene of the mouth can increase the risk of development of mouth cancer. Chronic irritation of the mouth mucosa was shown to enhance penetration of carcinogens into mucosa and to stimulate cell proliferation. Bacterial flora of the oral cavity was shown to contribute to the metabolism of chemical carcinogens. Deficiency of vitamins A and B led to development of precancerous conditions of the mouth mucosa. (74 Refs) (In RUS)

53. A COMPARISON OF RACIAL DISTRIBUTION OF CANCERS OF THE CERVIX AND PENIS AMONG 71 POPULATIONS IN 28 COUNTRIES (MEETING ABSTRACT)

Crombie IK, Sorahan TM
Department of Social Medicine, University of Birmingham, Birmingham, England
Br J Cancer; 44(2):276 1981

Populations predominantly of European descent ('whites') experienced cervical-cancer incidence rates which clustered tightly around a median value 14.0 x 10(-5). In contrast non-white incidences were more evenly spread about a higher median (22.4) and included many higher rates. A similar pattern, at lower incidences, emerged with penile cancer: whites clustered around the median (0.7); non-whites exhibited a wider range, a higher median (1.05) and no clustering. A highly significant correlation was found between the incidences of cervical and penile cancer among all registries. Of all the positive correlations between penis and the 45 female sites and cervix with the 43 male sites the largest co-efficient was obtained between penis and cervix, and no significant correlation was observed with any other genital site. Further examination revealed that the penis-cervix relationship was almost entirely due to the contribution of the 'non-white' populations, among whom a large and significant correlation co-efficient was observed; the positive coefficient among whites was small and non-significant. The category 'non-white' is a heterogeneous collection of races. Subdivision into more homogeneous groupings revealed a clustering of incidences: thus the Japanese in particular, but other Asian groups as well, exhibited low incidences of both cancers; whereas South American populations, and those of African descent, experienced a high incidence of both. The marked correspondence between the incidence of these cancers indicates related etiologies; possibly reflecting sexual mores or hygiene practices. (no Refs)

54. EPIDEMIOLOGICAL FEATURES OF WILMS' TUMOR: RESULTS OF THE NATIONAL WILMS' TUMOR STUDY.

Breslow NE, Beckwith JB
Dept. Biostatistics SC-32, Univ. Washington, Seattle, WA, 98195
JNCI; 68(3):429-436 1982

Nearly 2,000 children with Wilms' tumor registered in a national clinical trial during 1969-81 showed high rates of aniridia, hemihypertrophy, cryptorchidism, hypospadias, and other genitourinary anomalies. Patients with bilateral disease, who constituted 5% of the total, had younger ages at diagnosis and an increased incidence of congenital anomalies and renal blastemal rests. Those with multicentric unilateral lesions had more blastemal rests but were otherwise indistinguishable from the unicentric cases. The 20 familial cases had none of the features usually associated with genetic tumors: neither younger ages nor an increase in bilaterality nor associated congenital anomalies. These observations suggest that the fraction of Wilms' tumors that is due to an inherited mutation may be substantially smaller than previously supposed and support the concept that the disease arises from a variety of pathogenetic pathways. (Author abstract) (38 Refs)

VIRAL FACTORS INVOLVING ENVIRONMENTAL AND OCCUPATIONAL EXPOSURE

55. IMMUNOSUPPRESSION SYNDROME IN HOMOSEXUAL MEN. AN EPIDEMIOLOGICAL INVESTIGATION FROM THE CANCER RESEARCH INSTITUTE IN ARHUS.

Biggar RJ, Melbye M, Ebbesen P, Kerzel Andersen H, Vestergaard BF
NCI, Bethesda, MD
Ugeskr Laeger; 144(11):777-780 1982

A sudden increase in the incidence of immunosuppression syndrome with clinically highly malignant Kaposi's sarcoma and recurrent infections in homosexual men in the United States suggests repeated infections with cytomegalovirus. The sniffing of amyl nitrite, was found to be mutagenic in Ames' test, and possible to be a pathogenetic factor. An epidemiological study of 300 homosexual men (16-57-yr-old) in Arhus and Copenhagen revealed that 1/3-1/2 of the subjects used nitrites. Cytomegalovirus in sperm was found in 12% of all cases, ie, somewhat more frequently than in a historical control. (26 Refs) (In DAN)

56. KAPOSI'S SARCOMA: WHY A 'HOMOSEXUAL DISEASE'?

Groopman JE, Gottlieb MS
Div. Hematology-Oncology, Univ. California at Los Angeles Sch. Medicine, Los Angeles, CA
Hosp Pract; 17(5):64F-64G,64J,64N,64O,64R,64T 1982

Epidemiology, pathogenesis, classification, and therapy of Kaposi's sarcoma (KS) are reviewed. KS is intimately linked with cytomegalovirus infection in genetically and environmentally diverse hosts. The current epidemic of KS in homosexuals in the United States is one manifestation of a new, acquired immunodeficiency syndrome. Understanding the relationship between homosexuality, viral infection, immune status, and these neoplasms may contribute to understanding the basis of oncogenesis in KS. (43 Refs)

57. PATHOBIOLOGY OF HEPATITIS B VIRUS.

Gerber MA, Thung SN
Dept. Pathology, Mount Sinai Hosp. and Sch. Medicine, City Univ. New York, New York, NY, 10029
Pathobiol Annu; 11:197-228 1981

Knowledge of the pathology of hepatitis B virus (HBV) and more recent findings are discussed. The amount of virus specified unique gene products may be limited, although combined mol wt of all polypeptides from hepatitis B surface antigens (HBsAg), hepatitis B core antigen, and a cryptic form of hepatitis B antigen (HBeAg) appear to exceed the coding capacity of the small HBV genome, which is approx 100,000 daltons of protein. Recent studies indicate that HBsAg and albumin receptor activity emerge simultaneously in hepatocellular cytoplasm of HBV infected patients and also in the cytoplasm, on the cell surface, and in the supernatant culture media of an HBsAg producing hepatocellular carcinoma (HCC) cell line. The 28 nanometer core particles of HBV can be isolated from circulating Dane particles (DP) by detergent treatment or from hepatocellular nuclei of infected liver. Observation of two populations of DP may be of great biological importance since only full particles with complete genome may be infectious,

whereas empty particles may be defective and interfere with replication of homologous virus. HBeAg probably is an integral structural component of the HBV nucleocapsid, coded by the genome of the virus. In serum of HBV infected patients, HBeAg occurs free or in association with IgG, most likely as immune complexes. Diseases associated with HBV infection are acute and chronic hepatitis, and a variety of clinical syndromes may be associated with HBV infection. HBV may be one of the agents involved in the etiology of human HCC. HCC in man is highly correlated with prevalence of HBsAg carriers. Serologic markers of HBV infection are found in significantly higher frequency in patients with HCC, and tumor markers are detected in HCC cells. The possibility cannot be excluded that the virus plays a merely passive role in hepatocarcinogenesis. (228 Refs)

58. SERO-EPIDEMIOLOGIC STUDIES ASSOCIATE THE HUMAN T-CELL LEUKEMIA-LYMPHOMA VIRUS (HTLV) WITH ADULT MALIGNANCY OF MATURE T-CELLS (MEETING ABSTRACT)

Robert-Guroff M, Kalyanaraman VS, Sliski A, Blattner W, Catovsky D, Sarngadharan MG, Gallo RC
Litton Bionetics, Inc., Kensington, MD, 20895
Fed Proc; 41(3):689 1982

HTLV, a unique human retrovirus (RNA tumor virus), was isolated from cells of patients with lymphomas and leukemias of mature T-cells. Surveys of sera for antibodies to HTLV have shown HTLV to be rarely associated with such diseases in the US, but strongly linked to Japanese adult T-cell leukemia (ATL), lymphosarcoma T-cell leukemia (LCL), and peripheral T-cell lymphom: LCL is a malignancy of mature T-cells seen in some Caribbeans. ATL is a similar disease clustered geographically in Southwest Japan. Sera of 19 of 22 ATL patients and 3 of 3 LCL patients had antibodies to HTLV p24 and p19 as determined by radioimmunoprecipitation of p24 or by competition radioimmunoassay with a monoclonal anti-p19. Among sera of relatives of sero-positive patients, 20% were also positive, supporting the infectious nature of HTLV. Other normal donors lacked antibodies to HTLV, except for some healthy Japanese in the ATL endemic area, suggesting widespread viral exposure. Sera of children in the US with leukemias, lymphomas, and solid tumors were negative, as were sera from numerous adults with various neoplasias. While HTLV is thus not prevalent in this country, it may play a role in the etiology of mature T-cell neoplasias in other geographic locales. (no Refs)

POTENTIAL CARCINOGENIC FACTORS RELATED TO MEDICAL TREATMENT

59. THE STUDY ON THE MUTAGENIC ACTIVITY OF URINE FROM THE PATIENTS RECEIVING ANTI-CANCER DRUGS.

Pak K, Miyakawa M, Yoshida O
Dept. Urology, Shiga Univ. Medical Science, Japan
Hinyokika Kiyo; 27(12):1481-1495 1981

Mutagenic activity of urine from 43 patients with urogenital cancer was tested in the Salmonella typhimurium TA98 and TA100. Ninety-four urine samples were divided into four groups: Group 1, from patients receiving no drugs; Group 2 from patients receiving some drugs except for anti-cancer drugs; Group 3, from patients receiving single anti-cancer drug; Group 4, from patients receiving two anti-cancer drugs. A 24-hr urine was collected for Groups 1 and 2, and a urine from the time of administration to the next early morning was collected for Groups 3 and 4. No concentrates of Group 1 were mutagenic to either strain TA98 or TA100. No concentrates of Group 2 were mutagenic to either strain TA98 or TA100. Eight urine concentrates of Group 3 were mutagenic. The urine concentrate obtained after administration of cyclophosphamide was mutagenic to the strain TA100. Four concentrates from patients receiving adriamycin were mutagenic to the strain TA98 and/or TA100 and two urine concentrates were mutagenic to both strain TA98 and TA100. Two concentrates from patients receiving cis-diamminedichloride platinum were mutagenic to the strain TA100. Four urine concentrates of Group 4 were mutagenic. Both concentrates from the patients receiving adriamycin and 5-fluorouracil were mutagenic to the strain TA98. One urine concentrate from the patients receiving mitomycin C and cytosine arabinoside was mutagenic to the strain TA98. The concentrate from the patient receiving vincristine and actinomycin D was mutagenic to the strain TA98. Our results suggest that urinary metabolites of some anti-cancer drugs might act as an initiator on the urothelium. Although at the present time the detection of mutagenic activity in the urine does not necessarily predict carcinogenesis of the urothelium, the physician who uses anti-cancer drugs should be aware of delayed sequelae on the urinary tract. (77 Refs) (In JPN)

60. MALIGNANT CHANGE OF LATE RADIATION DAMAGES OF THE SKIN AND THEIR TREATMENT.

Bardycev MS
Forschungsinstitut fur medizinische Radiologie der AdmW der UdSSR, ul. Koroleva 4, 249020 Obninks, UdSSR, USSR
Radiobiol Radiother (Berl); 23(1):36-41 1982

Malignant change (MC) of late radiation damage of the skin was observed in 44 patients (19 men, 25 women; 40-87 yr old) administered radiotherapy (RT). Twelve patients had skin carcinoma (CA), 14 had gynecologic CA, 2 had mammary CA, 3 had lymphogranulomatosis, and others. Latency period between RT and MC was less than 5 yr to greater than 30 yr. Dosage administered was less than 40 Gray (Gy) in 2 of the patients, 40-60 Gy in 9, 60-80 Gy in 12, and greater than 60 Gy in 21. The MC of the skin consisted of atrophic or hypertrophic dermatitis in 9 of the patients, fibrosis in 15, and late ulceration in 20. Histologic diagnosis was of squamous carcinoma in 17 of the patients, basal cell CA in 14, melanoblastoma in 2, fibrosarcoma in 8, and 1 each angiosarcoma, liposarcoma, and leiomyosarcoma. Metastases were not observed. Ample resection was performed in 26 of the patients. Twelve of them were living less than 5 yr and 10 greater than 5 yr. RT with electrons (total dosage of 50-60 Gy) was administered to eight patients. All of them were living 2-5 yr, and relapse occured in two of them. Inoperable patients were treated successfully with local administration of 0.5% colchamine in 10% dimethyl sulfoxide solution every day for 12-18 days, followed by synthozon or glycolcorticoid creams. (14 Refs) (In GER)

61. NASOPHARYNGEAL ANGIOFIBROMA: RADIATION VS SURGERY.

Fahey DJ, Buolos EJ, Dayem HA, Alker G
Otolaryngology Dept., State Univ. New York at Buffalo, Buffalo, NY
Ear Nose Throat J; 61(4):233-237 1982

Juvenile nasopharyngeal angiofibroma (JNA), despite its benign histology, can be a highly destructive bone disease

which sends tumor processes throughout the nasal cavity. Diagnosis of JNA was made in a 14-yr-old boy by computed tomography of the head, nasopharyngoscopy and transnasal biopsy. Since the tumor was not readily resectable, radiation was the therapy of choice. The patient received 200 rads daily to a total of 4,000 rads in 20 increments over a period of 27 days. JNA is a slowly regressing tumor and a mass was still detected in the nasopharynx and sphenoid sinus until 20 mo post-therapy. The patient was free of disease 33 mo postirradiation with normal facial maturation and symmetry. When JNA is treated with radiation, treatment doses and ports must be planned individually to cover total tumor mass while protecting radiosensitive structures. Arguments against radiation therapy for JNA are presented; among the most dangerous long-term complication is carcinogenesis with two such cases reported in patients who received doses greater than 9,000 rads. (18 Refs)

62. CELLULAR LUNG DOSIMETRY FOR INHALED RADON DECAY PRODUCTS AS A BASE FOR RADIATION-INDUCED LUNG CANCER RISK ASSESSMENT: I. CALCULATION OF MEAN CELLULAR DOSES.

Hofmann W
Abteilung fur Biophysik am Institut fur Allgemeine, Biologie, Biochemie und Biophysik Universitat Salzburg, A-5020 Salzburg, Austria
Radiat Environ Biophys; 20(2):95-112 1982

Deposition and retention calculations for inhalation of Rn222 and its decay products are presented as a base for cellular dosimetry in different lung regions. The influence of various environmental and personal factors (dosage, age, respiratory minute volume, aerosol characteristics, mucociliary clearance, humidity, and inter- and intraindividual variability) on the cellular dose distribution is discussed. (46 Refs)

63. PEROXISOMES AND HYPOLIPIDEMIC AGENTS.

Heller F, Pourbaix S
Laboratoire de Pharmacotherapie, Universite Catholique de Louvain, 53, avenue E. Mournier, 1200 Bruxelles, Belgique
Pathol Biol (Paris); 30(4):220-225 1982

Peroxisomes (microbodies) have been localized in the cytoplasm of various cells, mainly the hepatocytes and the renal tubular cells. Various enzymes were found in the granular matrix and sometimes in the nucleus; they were involved in the production and the degradation of hydrogen peroxide, in regulation of the energetic processes of the cell, and in the oxidation of fatty acids. Several xenobiotica and drugs such as hypolipidemic agents clofibrate-like, have induced in rodents a proliferation of peroxisomes and frequently, the appearance of malignant tumors. In men, the precise role of peroxisomes in the physiology of the cell, their link with the hypolipidemic action of some drugs and the development of cancer remain to be established. (Author abstract) (40 Refs) (In FRE)

64. DERMATOLOGICAL RADIOTHERAPY AND RADIOCARCINOGENESIS.

Goldschmidt H
Dept. Dermatology, Univ. Pennsylvania Medical Sch., Philadelphia, PA, 19104
Hautarzt; 33(4):183-190 1982

Late effects of dermatologic radiotherapy include nonstochastic effects with relatively high threshold doses and stochastic effects that show no threshold effect. Nonstochastic effects include cataracts, disturbances of fertility, radiogenic dermatitis, and radiogenic skin cancer. Stochastic effects include carcinogenesis in internal organs and damage to the gonads. Reduction of the risk due to radiotherapy requires careful patient selection, proper protective measures, proper radiation quality, and careful calculation of max radiation doses. (18 Refs) (In GER)

65. SECONDARY MALIGNANCY OF HEMOPOIETIC CANCER AND CHEMOPREVENTION.

Ota M
Second Dept. Internal Medicine, Aichi Cancer Center, Nagoya, Japan
Rinsho Ketsueki; 22(8):1365-1366 1981

The improvement and popular use of radiotherapy and chemotherapy allow better survival chance for cancer patients. As the survival time improved, however, the problem of secondary malignancy induced by the chemicals or radiation used in the therapy becomes increasingly severe. To prevent secondary inducement of cancer, an answer may lie in chemoprevention. As the problem of secondary malignancy increases, it would not be too premature to begin clinical tests with chemoprevention agents. (9 Refs) (In JPN)

66. VM26: PHASE I AND II STUDIES.

Macbeth FR
CRC Medical Oncology Unit, Centre Block, CF99, Southampton General Hosp., Southampton S09 4XY, England
Cancer Chemother Pharmacol; 7(2/3):87-91 1982

Reports (25) of Phase I and II studies of 4-demethyl epipodophyllotoxin-9-(4,6-0-2 thenylidene beta-D-glucopyranoside) (VP26) with 1,069 patients were reviewed. Two basic dosage schedules (iv) were used: weekly dose at 70-100 mg/m2 with escalation to 130-180 mg/m2 if tolerated; administration on 5 consecutive days with a repeat at 2-4 wk at 30-100 mg/m(2)/day. Acute hypotension has been associated with VM26 but this usually occurred in cases of rapid iv infusion; the drug has also been administered by intravesical installation with some resultant chemical cystitis. No reports of po administration were found. The major and dose-limiting toxicity was bone marrow suppression; leukopenia occurred in 15-90% of patients on a weekly regimen and 28-38% of patients on the 5-day regimen. Significant antitumor activity was found in Hodgkin's disease, non-Hodgkin's lymphoma, childhood neuroblastoma and childhood acute lymphoblastic leukemia. Use in chemotherapy of primary brain tumors and small cell carcinoma of the bronchus is controversial. In compiling this review study, criteria for assessment of marrow toxicity was not standard and drug schedules varied among the various institutions. (35 Refs)

67. THOROTRAST-INDUCED ANGIOSARCOMA OF LIVER.

Benjamin AG, Albukerk JN
Dept. Pathology, Southside Hosp., New York, NY
NY State J Med; 82(5):751-753 1982

A 76-yr-old woman who had received thorium dioxide (Thorotrast) for angiography developed angiosarcoma of the liver 32 yr later. The clinical and pathologic findings of this rare iatrogenic tumor are presented, and pertinent aspects are discussed. (Author abstract) (13 Refs)

68. INITIAL STUDIES OF THE POTENTIAL HAZARDS TO PERSONNEL ADMINISTERING CHEMOTHERAPY: METHOTREXATE (MTX) AND ADRIAMYCIN (ADR) (MEETING ABSTRACT)

Gross J, Johnson BL, Graham ML, Greene R, Myers CE, Bertino JR
Yale University, New Haven, CT, 06510
Proc Am Soc Clin Oncol; 1:C-127 1982

Policies governing the preparation, administration and disposal of antineoplastic agents are being adopted by many institutions. These guidelines are based on limited and inconclusive data regarding the risk of systemic exposure to personnel. MTX and ADR, two of the more frequently administered cytotoxic agents for the treatment of malignancies, were chosen for initial studies of the potential hazards for nurses (RNs) who handle these drugs. Fourteen RNs from a variety of ambulatory care settings, which do not prescribe special precautions, were studied for systemic absorption of MTX and ADR as an indicator of risk. All RNs had at least 6 months experience handling cancer chemotherapeutic agents. Each nurse submitted blood (B) and/or urine (U) specimens for baseline MTX or ADR levels, and again after a period of maximum MTX or ADR exposure (MAX). MTX B and U assays, capable of detecting 1.0x10-9M and 2.0x10-10M respectively, and ADR B assays capable of detecting 5.0x10-9M, were performed. RNs not at MAX served as controls. Information was gathered regarding individual and routine drug handling practices in each setting. All MTX assays were negative. It would appear that current practices safeguard personnel from the risk of systemic absorption of MTX. ADR assays are pending. This study provides a workable model for further investigation of the hazards of handling antineoplastic drugs. (no Refs)

69. SECOND MALIGNANCIES IN OPERABLE BREAST CANCER (MEETING ABSTRACT)

Senn HJ, Holdener E, Osterwalder J, Gloor F
Department of Internal Medicine C, Division of Oncology, Kantonsspital, CH-9007 St. Gallen, Switzerland
Proc Am Soc Clin Oncol; 1:C-324 1982

Second malignancies (SM) represent one of the potential hazards of modern cancer treatment, especially radio- and chemotherapy after surgery for breast cancer. For this reason, regional cancer registry data (1960-75) on 1985 breast cancer patients (pts) were analyzed for SM in the retrospective part of our study. SM were observed in 77 cases (4%), of which 17% were found before, 18% simultaneously and 65% after the diagnosis of breast cancer. Most frequent SM were of GI-(35%), GYN-(22%), breast (13%) and CNS-origin (10%). No difference in the rate of SM was found between the major treatment groups: The median time from mastectomy to diagnosis of SM was 3 years. Sixty-six percent of SM were observed within 5 and 89% within 10 years. Median survival of pts with SM diagnosed post mastectomy was 4.8 years from primary breast surgery while it was only 4 months in pts with a SM observed before and 12 months in those with a SM diagnosed simultaneously with breast cancer. These data were confronted with the prospective part of the study, where 5/123 (4.1%) of pts in the surgical control regimen and only 1/118 pts (0.8%) with adjuvant LMF (Chlorambucil, Methotrexate, 5-Fluorouracil) + BCG developed SM within 6 years median observation time post mastectomy. These data are compared to other current adjuvant breast trials and do not indicate an increased risk of SM by present adjuvant therapy. (no Refs)

PUBLIC POLICY INVOLVING ENVIRONMENTAL OCCUPATIONAL CARCINOGENS

70. OCCUPATIONAL EXPOSURE TO INORGANIC ARSENIC.

Auchter TG
(c/o R. P. Beliles) Occupational Safety and Health Admin., United States Dept. Labor, Room N3718, Washington, DC, 20210
Fed Regist; 47(69):15358-15367 1982

This notice reopens the rulemaking record for the Inorganic Arsenic Standard to receive information relating to assessments of risk from exposure to inorganic arsenic and the significance of that risk. Preliminary risk assessments are presented for public comment. The notice is published in response to the Ninth Circuit Court of Appeals remand which orders the Agency to receive additional evidence and make additional findings on the issues presented by Industrial Union Department v American Petroleum Institute, 448 US 607 (1980). The Court further ordered that, subject to limited stays issued by the Court, the standard would remain in effect during the proceeding. (Author abstract) (23 Refs)

71. SOUTH AFRICA BLACKS OUT BLUE ASBESTOS RISK.

Flynn L
No affiliation given
New Sci; 94(1302):237-239 1982

This report chronicles the events leading to the suppression by the South African Medical Research Council (after urging by the asbestos industry) of research pointing to a link between asbestos and cancer. A paper entitled 'Mortality from asbestos related disease in South Africa' by Irwig and Botha was ordered not to be presented at a 1978 New York Academy of Sciences sponsored meeting; the results have still not been published. The paper concluded that people living in asbestos-producing areas had a significantly greater than normal incidence of cancer (specifically mesothelioma) mortality. (no Refs)

72. TOLERANCES AND EXEMPTIONS FROM TOLERANCES FOR PESTICIDE CHEMICALS IN OR ON RAW AGRICULTURAL COMMODITIES; CYANO(3-PHENOXYPHENYL)METHYL 4-CHLORO-ALPHA-(1-METHYLETHYL)BENZENEACETATE.

Johnson EL
(c/o F. D. Gee) Office of Pesticide Programs, Environmental Protection Agency, Room 207, CM 2, 1921 Jefferson Davis Highway, Arlington, VA, 22202
Fed Regist; 47(77):17056-17057 1982

This rule establishes tolerances for residues of the insecticide cyano(3-phenoxyphenyl)methyl 4-chloro-alpha-(1-methylethyl)benzeneacetate in or on the raw agricultural commodities cucumbers and summer squash. This regulation to establish the maximum permissible level for the insecticide in or on the commodities was requested by Shell Oil Company. (Author abstract) (no Refs)

73. TOLERANCES AND EXEMPTIONS FROM TOLERANCES FOR PESTICIDE CHEMICALS IN OR ON RAW AGRICULTURAL COMMODITIES; TERBUFOS.

Miller WH

Registration Div. [TS-767C] Office Pesticide Programs, Environmental Protection Agency. Room 211, CM 2, 1921 Jefferson Davis Highway, Arlington, VA, 22202

Fed Regist; 47(77):17058-17059 1982

This rule establishes tolerances for the combined residues of the insecticide terbufos and its cholinesterase-inhibiting metabolites in or on sorghum fodder, sorghum forage, and sorghum grain. This regulation to establish the maximum permissible level for the combined residues of the insecticide in or on the commodities was requested by American Cyanamide Co. (Author abstract) (no Refs)

74. CARBARYL: PROPOSED TOLERANCES.

Campt DD

(c/o D. R. Stubbs) Emergency Response Section, Registration Div.(TS-767C), Environmental Protection Agency, 401 M St. SW, Washington, DC, 20460

Fed Regist; 47(82):18151-18152 1982

This notice proposes that tolerances be established for the combined residues of the insecticide carbaryl and its hydrolysis product, 1-naphthol, in or on certain raw agricultural commodities. The proposed amendment to establish maximum permissible levels for residues of the insecticide in or on the commodities was submitted by the Interregional Research Project No 4 (IR-4). (Author abstract) (no Refs)

75. CHLOROTHALONIL: PROPOSED TOLERANCE.

Campt DD

(c/o D. R. Stubbs) Emergency Response Section, Registration Div. (TS-767C), Environmental Protection Agency, 401 M St. SW, Washington, DC, 20460

Fed Regist; 47(82):18152-18153 1982

This notice proposes that a tolerance be established for the combined residues of the fungicide chlorothalonil and its metabolite 4-hydroxy-2,5,6-trichloroisophthalonitrile in or on the raw agricultural commodity dry beans. The proposed amendment to establish a maximum permissible level for residues of the fungicide in or on the commodity was submitted by the Interregional Research Project No 4 (IR-4). (Author abstract) (no Refs)

76. TOLERANCES FOR PESTICIDES IN FOOD ADMINISTERED BY THE ENVIRONMENTAL PROTECTION AGENCY; CHLORPYRIFOS.

Johnson EL

(c/o J. Ellenberger) Registration Div., Office of Pesticide Programs, Environmental Protection Agency, Room 202, CM 2, 1921 Jefferson Davis Highway, Arlington, VA, 22202

Fed Regist; 47(87):19321-19322 1982

This rule establishes a regulation permitting the combined residues of the insecticide chlorpyrifos and its metabolite in corn oil. This regulation to establish the maximum permissible level for the combined residues of the insecticide in corn oil was requested by Dow Chemical Co. (Author abstract) (no Refs)

77. MAJOR APPROACHES TO THE EXPERIMENTAL STUDY OF LUNG CANCER.

Pliss GB, Turusov VS, Zabezhinskii MA

No affiliation given

Vopr Onkol; 28(2):18-22 1982

Experimental models used in the study of the etiology and pathogenesis of lung cancer are reviewed. The experimental lung tumors should meet following requirements: ease of induction, high selectivity and reproducibility, and similarity with human tumors with respect to the morphology and clinical manifestations. Metabolism of various carcinogens was studied in organ cultures of human bronchi. Experiments in nude mice subjected to sc implantation of the fragments of human bronchi and administration into the transplants of the pills containing 7,12-dimethylbenz(a)anthracene or 3-methylcholanthrene provided additional data on the sensitivity of bronchial epithelium to various carcinogens and the characteristic features of different stages of carcinogenesis. Experimental models confirmed the role of chronic lung diseases in the etiology of lung cancer. Experimental studies of the dose-effect curves during pulmonary carcinogenesis induced by polycyclic hydrocarbons provided the basis for the estimation of the maximum permissible levels of benzo(a)pyrene in the air. (20 Refs) (In RUS)

78. TETRACHLOROETHYLENE: DEVELOPMENT OF A BIOLOGIC STANDARD FOR THE INDUSTRIAL WORKER BY BREATH ANALYSIS.

Stewart RD, Hake CL, Forster HV, Lebrun AJ, Peterson JE

Dept. Environmental Medicine, Medical Coll. Wisconsin, Inc., Milwaukee, WI

Tetrachloroethylene: Development of a Biologic Standard for the Industrial Worker by Breath Analysis. Available from National Technical Information Service, Springfield, VA, as PB82-152566, 177 pp., 1981.

The development of a biologic standard for exposure of industrial workers to tetrachloroethylene (PCE) (127184), based on breath analysis, was carried out in a comprehensive study using human volunteers. Particular emphasis was placed on: (1) the subject's health, including measurements of pulmonary, cardiovascular, and central nervous system functions during repeated, controlled exposures to PCE vapor; and (2) the relationship of exposure magnitude to PCE body burden, as demonstrated by the measurement of PCE or its metabolites in blood, urine and breath. A baseline is presented for additional studies which are needed to assure a healthful working environment wherever this chemical is utilized. The observations made and the data collected are provided, and a recommendation is presented for a biologic threshold-limit-value for tetrachloroethylene utilizing breath analysis decay curves. It is concluded that: (1) repeated daily exposure to PCE results in a tachyphylactic response regarding subjective feelings and odor detection, rendering these parameters unreliable as measures of exposure concentration; (2) considerable individual differences exist in response to PCE vapor exposure; (3) EEG analysis indicates preliminary signs of narcosis in most subjects exposed to 100 ppm PCE for 7 1/2 hr; (4) CNS response is probably due to PCE; (5) postexposure breath analysis is an excellent method to estimate magnitude of body burden; and (6) physical exercise increases body burden. (Author abstract)

79. SCIENTIFIC STRATEGIES TO SAVE YOUR LIFE.

Bross ID

Roswell Park Memorial Inst. Cancer Research, Buffalo, NY

Scientific Strategies to Save Your Life. New York, Marcel Dekker, Inc., Statistics-Textbooks and Monographs, Vol. 35, 259 pp., 1981.

The public health problems associated with hazardous technological products and processes are discussed, with emphasis on the risks of low-level radiation exposure. Data presented to the Nuclear Regulatory Commission based on results of the Tri-State Survey carried out in areas of upstate New York, Maryland, and Minnesota are considered. Analysis of the incidence of leukemia and indicator diseases in a population base of 13 million persons has shown that the children of persons exposed to low-level radiation have a relative risk of 50 for leukemia and a relative risk of 5 for the indicator childhood disease (asthma, eczema, urticaria, pneumonia, dysentery, or rheumatic fever). Both the linear extrapolation model and the threshold model fail to fit the observed disease counts. These findings are interpreted as an indication that the actual dose-response curve flattens as it approaches the 1-rad range and the extrapolative estimates seriously underestimate the actual risk of the low-level radiation. Public health issues involved in the controversy over low-level radiation include the specification of permissible exposure levels in the nuclear industry and cost-benefit analysis of mass screening programs for breast cancer. A cost-to-benefit ratio of 125:1 is thought to be based on a miscalculation. Propagation of such an error may lead to a serious underestimation of the risk of mammography in women less than 50 yr old. (53 Refs)

80. CANCER OF THE PROSTATE.

Jones AG, Hoeft RT

Univ. Hosp. and Clinics, Madison, WI

Am J Nurs; 82(5):826-829 1982

Rectal examination is the only reliable screening method for prostatic carcinoma (PC); fewer than 20-25% of PC are detected in early stages. Death rates from PC have not changed substantially in the past 30 yr. Nurses and health care professionals must stress the importance of routine rectal examinations in men over the age of 40. Diagnosis and treatment of PC are reviewed and methods for reducing pain are described. (14 Refs)

81. TOLERANCES AND EXEMPTIONS FROM TOLERANCES FOR PESTICIDE CHEMICALS IN OR ON RAW AGRICULTURAL COMMODITIES; TRIFLURALIN.

Johnson EL

(c/o R. F. Mouatfort) Registration Div., Office of Pesticide Programs, Environmental Protection Agency, Room 237 CM No. 2, 1921 Jefferson Davis Highway, Arlington, VA, 22202

Fed Regist; 47(92):20307-20309 1982

This rule establishes tolerances for residues of the herbicide and plant growth regulator trifluralin in or on certain raw agricultural commodities. This regulation to establish the maximum permissible level for residues of trifluralin in or on these commodities was requested by Elanco Products Co. (Author abstract) (no Refs)

ANALYTICAL AND METHODOLOGICAL ASPECTS OF CANCER EPIDEMIOLOGY

82. EPIDEMIOLOGY OF CANCER.

Newell GR, Boutwell WG, Morris DL, Tilley BC, Branyon ES

Div. Cancer Prevention, Univ. Texas System Cancer Center, M.D. Anderson Hosp. and Tumor Inst., Houston, TX

Cancer - Principles and Practice of Oncology. DeVita VT, Hellman S, and Rosenberg SA, ed. Philadelphia, Lippincott, 1926 pp., 1982.

Epidemiologic principles, study designs, statistical procedures, data sources, incidence and mortality studies, and screening procedures for malignant diseases in defined populations are discussed. Systematic epidemiologic investigations usually begin with a hypothesis suggesting an association between a potential etiologic factor and a specific type of cancer. The investigation is designed to determine whether a statistical association exists between the suspected factor and cancer, and whether any association discovered is of causal nature. The causal significance of such an association goes beyond statistical probability. Certain criteria must be met before a causal association can be assumed. The following criteria are discussed: strength of the association, replication or consistency of the association in multiple studies, an association grounded in biologic knowledge, temporal sequence of exposure to the suspected etiologic factor and the development of cancer (this concept is particularly important in view of the long latent period involved), and dose-response relationships between exposure to the agent and the development of the disease (this criterion holds true for most known etiologic factors). One-sided (one-tailed) studies are used to determine whether a positive or negative association exists between a suspected etiologic factor and a given cancer. Two-sided studies are needed to determine whether any association exists. (138 Refs)

83. MEASUREMENT OF CANCER INCIDENCE IN THE UNITED STATES: SOURCES AND USES OF DATA.

Greenberg ER, Colton T, Bagne C

Norris Cotton Cancer Center, Dartmuth-Hitchcock Medical Center, Hanover, NH, 03755

JNCI; 68(5):743-750 1982

Since 1937, investigators have compiled a vast amount of information on cancer incidence in the United States. Three national cancer surveys were conducted in 1937, 1947, and 1969-71; each used somewhat different methods but covered populations who overlapped greatly. Concurrently, population-based tumor registries were developed that were capable of measuring cancer incidence. Since 1973, the Surveillance, Epidemiology and End Results Program, an amalgam of such registries, has generated cancer incidence data for the United States. Available data provide a rough measure of the size of the cancer problem and may help those who direct prevention programs and those who plan studies of cancer etiology. Because the completeness and validity of existing incidence data are not known with certainty, comparisons among these incidence rates require cautious interpretation. (Author abstract) (66 Refs)

84. ORGANIZATION OF EARLY DETECTION OF LUNG CANCER.

Vagner RI, Pozmogov AI, Shumakov AG, Barchuk AS, Sheliakina TV, Shtein FM

No affiliation given

Vopr Onkol; 28(2):28-33 1982

Approaches to the early detection of lung cancer (LC) are reviewed. Among all primary LC patients, 12.3-56.8% (in different cities) were diagnosed during the mass x-ray examination. The apparently low diagnostic efficacy of mass screening is associated with organizational difficulties. Epidemiological data indicate that almost 90% of LC patients are greater than 50 yr, while 84% of the cohort subjected to x-ray examination were less than 50 yr. It was emphasized that the planning of the mass examination should be based upon the age, occupational, and geographical characteristics of the population. The system of active detection of LC should include immediate tomographic examination of the patients with suspected lung pathology, follow-up of the patients in the high risk groups, hospitalization of the patients with suspected LC, follow-up or conservative treatment of the patients in Stage IV. (9 Refs) (In RUS)

85. THE TIME-ORIENTED RECORD FOR ONCOLOGY (TORO): AN INTERACTIVE COMPUTER DATABASE SYSTEM FOR ONCOLOGY RESEARCH AND PATIENT CARE (MEETING ABSTRACT)

Cox EB, Stanley WE, Laszlo J

Duke Comprehensive Cancer Center, Durham, NC, 27710

Proc Am Soc Clin Oncol; 1:C-239 1982

A comprehensive data management system has been developed for the needs of oncologic clinicians and investigators. The defining characteristic of TORO is its time orientation, which allows efficient storage and retrieval of repeated observations (flowsheets). The interactive data entry and retrieval programs are driven by a data dictionary defining the data items for each project. Customized reports, summary reports and flowsheet printouts may be produced on individual patients or patient groups. A powerful query language allows patient subsets to be defined by means of a criteria expression applying time, arithmetic, relational and logical constraints to the database search. A selection of parametric and non-parametric statistical procedures is incorporated into TORO, emphasizing methods related to survival and remission analysis, including multiple regression techniques. Survival graphs, scatter diagrams, cumulative distribution plots and histograms are among standard graphics produced by TORO. TORO serves a wide variety of applications in the Cancer Center, including study design, protocol management, clinic management, medical records, cancer registry, management and analysis of clinical trials, research data analysis and epidemiologic research. An interface exists to allow easy transfer of data to and from other data management systems. (no Refs)

GENERAL AND MISCELLANEOUS FACTORS

86. CANCER - PRINCIPLES AND PRACTICE OF ONCOLOGY.

DeVita VT, Hellman S, Rosenberg SA

NCI, Bethesda, MD

Cancer - Principles and Practice of Oncology. Philadelphia, Lippincott, 1926 pp., 1982.

Principles and practices in oncology are reviewed with the aim of presenting an integrated multidisciplinary approach to cancer. Principles of oncology are presented with respect to the cause and evolution of cancer as a biologic phenomenon. The essential principles of modern cancer diagnosis and treatment are discussed, and topics include epidemiology; etiology and prevention of cancer; cell biology and biochemistry; kinetics of cellular proliferation; biology of cancer metastasis; principles of surgical oncology, chemotherapy, and radiotherapy; clinical pharmacology of cancer chemotherapy; design and conduct of clinical trials; diagnosis and staging; and psychosocial aspects of patients with cancer. Practice of Oncology is presented with respect to the management of specific cancers and complications caused by either the cancer itself or its treatment. Topics include cancer of the head and neck, stomach, lung, mediastinum, esophagus, pancreas, hepatobiliary system, small intestine, colon and rectum, anal region, genitourinary system, testis, ovary and other gynecologic organs, breast, endocrine system, and skin; sarcomas; cutaneous and intraocular melanomas; tumors of the CNS; childhood cancers; Hodgkin's disease; non-Hodgkin's lymphomas; adult acute leukemias; chronic leukemias; plasma cell neoplasms; paraneoplastic syndromes; management of the patient with an unknown primary site; treatment of metastatic cancer; oncologic emergencies; supportive care; infections; adverse effects of treatment; rehabilitation; administration of cancer treatments; newer methods of cancer treatment; and unproven methods of cancer treatment. (11312 Refs)

87. PRINCIPLES OF CANCER BIOLOGY: ETIOLOGY AND PREVENTION OF CANCER.

Upton AC

Dept. Environmental Medicine, New York Univ. Medical Center, New York, NY

Cancer - Principles and Practice of Oncology. DeVita VT, Hellman S, and Rosenberg SA, ed. Philadelphia, Lippincott, 1926 pp., 1982.

Somatic mutation, aberrant differentiation, virus activation, and cell selection form the basis of contemporary theories of carcinogenesis. None of these theories accounts for all of the observed phenomena of neoplasia. Both initiating and promoting factors seem to be required for chemical carcinogenesis in humans. The development of sound safety standards and codes of practice are the best means of risk avoidance, but the development of these standards has often lagged behind the demonstration of carcinogenicity. The problem has been complicated by uncertainty and controversy about the criteria for the determination of the carcinogenicity of a given agent, and also for assessing the magnitude of the risk occurring in exposed populations. Workable interim approaches to the resolution of these problems have been developed. (194 Refs)

88. CANCER IN THE HEAD AND NECK.

Million RR, Cassisi NJ, Wittes RE

Div. Radiation Therapy, Univ. Florida, Gainesville, FL

Cancer - Principles and Practice of Oncology. DeVita VT, Hellman S, and Rosenberg SA, ed. Philadelphia, Lippincott, 1926 pp., 1982.

In a review of cancer in the head and neck the following aspects were included: epidemiology, anatomy, and pathology. Other sections include natural history (patterns of spread), methods of diagnosis and staging, general principles for (1) selection of treatment, (2) surgery (3), radiation therapy (RT), (4) chemotherapy (CH), and (5) combining modalities (surgery plus RT, CH and surgery or RT, CH and RT, and regional CH). These guides are then applied in detail to cancers located in oral cavity, larynx, nasal vestibule, nasal cavity, and paranasal sinuses, glomus body (chemodectomas), major salivary glands, and minor salivary glands. Results of various trials from the literature are presented in tabular form. Complications of treatment are also discussed. (253 Refs)

89. COLORECTAL CANCER.

Sugarbaker PH, Macdonald JS, Gunderson LL

NCI, NIH, Bethesda, MD

Cancer - Principles and Practice of Oncology. DeVita VT, Hellman S, and Rosenberg SA, ed. Philadelphia, Lippincott, 1926 pp., 1982.

The anatomy of the large bowel, and the pathobiology and treatment of neoplastic lesions of the large bowel are described and illustrated in detail. Gross anatomy of the colon, histology and physiology of colonic epithelium, epidemiology of colonic neoplasms, natural history of surgically treated colorectal cancer, patterns of recurrence, pathology (including growth patterns of normal and abnormal mucosa), staging of colonic cancer, prognosis, clinical features and their effect on prognosis (including diagnosis in asymptomatic patients, long duration of symptoms, preoperative carcinoembryonic antigen determination), pathological features and their effect on prognosis, screening for cancer in asymptomatic patient populations, screening techniques for colorectal cancer, diagnosis of colorectal cancer in the symptomatic patient, constricting lesions from large bowel cancer, diagnosis of recurrent colorectal cancer, treatment of colorectal polyps, principles of surgical treatment of colorectal cancer, principles of radiation therapy of colorectal cancer, principles of chemotherapy for colorectal cancer, treatment of primary colorectal cancer, treatment of rectal cancer, adjuvant chemotherapy, and treatment of recurrent and disseminated disease are discussed. (578 Refs)

90. GENITO-URINARY MALIGNANCIES.

Paulson DF, Perez CA, Anderson T

Div. Urology, Duke Univ. Medical Center, Durham, NC

Cancer - Principles and Practice of Oncology. DeVita VT, Hellman S, and Rosenberg SA, ed. Philadelphia, Lippincott, 1926 pp., 1982.

The epidemiology, natural history, and current treatment of adenocarcinomas of the kidney, transitional cell carcinomas of the renal pelvis, ureter, or bladder, adenocarcinomas of the prostate, squamous cell carcinomas of the penis, and carcinomas of the urethra in males and females are discussed, with particular reference to areas of continuing controversy. (334 Refs)

91. CANCER OF THE TESTIS.

Paulson DF, Einhorn L, Peckham M, Williams SD

Div. Urology, Duke Univ. Medical Center, Durham, NC

Cancer - Principles and Practice of Oncology. DeVita VT, Hellman S, and Rosenberg SA, ed. Philadelphia, Lippincott, 1926 pp., 1982.

Histologic patterns, etiology and epidemiology, clinical presentation, physical examination, diagnosis, staging, serum marker proteins, and clinical management of testicular tumors are reviewed. Treatment requires eradication of all detectable disease at the lowest risk to the patient. Until it is demonstrated that retroperitoneal lymph node dissection (RLND), which is of proven diagnostic and therapeutic value, poses a greater hazard than the failure to detect disseminated disease, RLND must remain prominent in the treatment plan for seminomas and nonseminomatous germ cell tumors of the testis beyond the early stages. Combinations of cis-diamminedichloroplatinum(II) (DDP), vincristine (0.3 mg/kg), and bleomycin (with or without adriamycin) may lead to a projected cure rate of 70-80% in patients with Stage III nonseminomatous tumors, which is higher than the surgical cure rate for Stage II disease. Radiotherapy (RT) may be as effective as RLND in controlling retroperitoneal disease, but RT (particularly to supradiaphragmatic areas) might compromise the bone marrow and impair the efficacy of subsequent chemotherapy. Regardless of the treatment given, tumor vol affects response to therapy. Treatment of bulky disease should be planned so as not to compromise subsequent therapy. It is suggested that initial chemotherapy, followed by resection of residual tumor and RT if the resection margins are positive, may provide more effective control of bulky retroperitoneal disease. Initial surgical debulking destroys tissue planes which could be used at a second attempt at RLND after chemotherapy. (112 Refs)

92. CANCER OF THE OVARY.

Young RC, Knapp RC, Perez CA

Medicine Branch, NCI, Bethesda, MD

Cancer - Principles and Practice of Oncology. DeVita VT, Hellman S, and Rosenberg SA, ed. Philadelphia, Lippincott, 1926 pp., 1982.

Cancer of the ovary is discussed with respect to epidemiology, pathogenesis, pathology, diagnosis and staging, and management. Epithelial carcinomas comprise 80-90% of ovarian tumors. Tumor grade (differentiation) is an important determinant of treatment response and survival, especially in Stage I-II patients. Surgical staging is the first phase of treatment. Menopausal or perimenopausal patients should undergo radical hysterectomy. Patients less than 35 yr old (in whom 90% of epithelial ovarian tumors are benign) should undergo conservative surgery, unless the tumor is poorly differentiated. No further treatment may be needed for Stage IA-IB well-differentiated tumors with no residual disease after a complete staging procedure. The choice of treatment is not clear for patients with poorly differentiated Stage I tumor or Stage IC-III disease with minimal or no residual tumor. Randomized comparisons of total abdominal-pelvic radiotherapy (RT), single-agent chemotherapy (alkylating agent), and combination chemotherapy are needed. If advanced disease is present at diagnosis, 75% of the patients have tumors too extensive for cytoreductive surgery and respond poorly to all types of conventional therapy. Combination chemotherapy after the failure of single-agent treatment with alkylating agents seldom leads to more than a partial remission lasting 4-6 mo. Concomitant or sequential treatment with RT to sites of bulky residual disease may be possible. The management of germ cell and stromal ovarian tumors depends on their histologic types. Some of the highly

aggressive tumors are curable using combination chemotherapy. (168 Refs)

93. CANCER OF THE BREAST.

Hellman S, Harris JR, Canellos GP, Fisher B
Dept. Radiation Therapy, Harvard Medical Sch., Boston, MA
Cancer - Principles and Practice of Oncology. DeVita VT, Hellman S, and Rosenberg SA, ed. Philadelphia, Lippincott, 1926 pp., 1982.

Epidemiology, pathology, classification of tumor types, tumor characteristics, local and regional spread, staging, theories on the spread, pretreatment evaluation, screening, and treatment of breast cancer are reviewed. Conservative surgery and/or radiotherapy (RT) and radical mastectomy (with or without RT) are about equally effective local treatments. Treatment of Stage III disease requires a combination of effective local treatment (usually RT) and systemic therapy. Menstrual status, extent of disease, and the tumor's estrogen receptor (ER) content should be used to select candidates for endocrine therapy (additive or ablative), antiestrogen, and chemotherapy. Combinations of cyclophosphamide with 5-fluorouracil and methotrexate or adriamycin are the most effective cytotoxic regimens. Patients with extensive, rapidly progressive metastases seldom respond to endocrine therapy and should be given chemotherapy. In other cases, the sequence of administration of endocrine therapy and chemotherapy is unrelated to survival. Endocrine therapy may be effective in patients with ER-positive tumors who relapse after chemotherapy, but second-line chemotherapy tends to be ineffective. Sequential administration of alternating non-cross-resistant cytotoxic regimens does not improve the occurrence or duration of remissions. Recurrences may consist of cross-resistant cell lines. A combination of vinblastine and mitomycin C may be useful against these refractory relapses. Further progress in therapeutic research will require continuing admission of patients to clinical trials. Since systemic therapy is palliative in most patients with advanced disease, potentially effective new treatments may be given to patients in symptomatic early relapse from the best first-line chemotherapy. Diagnosis and treatment of lobular breast cancer in situ and of breast cancer in males are discussed. (396 Refs)

94. CANCER OF THE ENDOCRINE SYSTEM.

Brennan MF, Bloomer WD, Macdonald JS
Dept. Surgery, Memorial Sloan-Kettering Cancer Center, Cornell Univ., New York, NY
Cancer - Principles and Practice of Oncology. DeVita VT, Hellman S, and Rosenberg SA, ed. Philadelphia, Lippincott, 1926 pp., 1982.

Cancer of the thyroid gland, adrenal gland, and endocrine pancreas, carcinoid tumors, and multiple endocrine neoplasia syndrome are reviewed. Topics discussed with respect to thyroid gland cancer include history, epidemiology, anatomic considerations, pathology (follicular, medullary, undifferentiated carcinomas), natural history of thyroid carcinomas, pathogenesis (radiation-induced), patterns of spread, clinical presentation, diagnostic methods, standard work-up, treatment (surgery, radioactive iodine), results, complications of treatment, and follow-up. Adrenal gland neoplasms are considered with regard to anatomic considerations, the adrenal cortex, natural history of adrenal cortical tumors, clinical presentation, methods of diagnosis and staging of functional tumors, results of localization studies, adrenal medulla, natural history of pheochromocytoma, treatment of metastatic disease, and results of treatment. The epidemiology, natural history, clinical presentation, and diagnosis of tumors of the endocrine pancreas are discussed. Also examined are the anatomy of the pancreas, Zollinger-Ellison syndrome (surgical treatment and results), insulinoma, glucagonoma, WDHA syndrome (watery diarrhea, hypokalemia, and achlorhydria syndrome), somatostatinoma, pancreatic polypeptide, surgical management of pancreatic endocrine tumors, and treatment of metastatic disease. The history, epidemiology, genetics, pathology, pathogenesis, diagnosis, treatment, results, and screening of carcinoid tumors are discussed. The history, epidemiology, natural history, clinical presentation, treatment, and results in multiple endocrine neoplasia are considered. (474 Refs)

95. SARCOMAS OF THE SOFT TISSUE AND BONE.

Rosenberg SA, Suit HD, Baker LH, Rosen G
Dept. Surgery, NCI, Bethesda, MD
Cancer - Principles and Practice of Oncology. DeVita VT, Hellman S, and Rosenberg SA, ed. Philadelphia, Lippincott, 1926 pp., 1982.

Sarcomas of the soft tissue and bone are reviewed with respect to incidence, epidemiology, sites, pathologic classification, malignant and benign lesions, diagnosis, staging, histologic types, and treatment. Recommended treatment for soft tissue sarcomas (STS) of any histologic type is resection of all tissues (including bone) in the involved anatomic compartment, combined with radiotherapy (RT). The 5-yr survival rate is about 40% in patients with STS of the extremities and certain adequately treated STS of some proximal sites. The most effective chemotherapy regimens in patients with disseminated STS include adriamycin (ADR). Further clinical trials of ADR-containing regimens are needed. Recommended treatment for osteogenic sarcomas of the extremities is cross-bone amputation at the correct level, which provides local control in greater than 90% of patients. In patients given combination chemotherapy regimens including ADR and/or high-dose methotrexate (MTX) with citrovorum factor (CF), the 3-yr disease-free survival rates may be 80% or more. Recommended treatment for chondrosarcomas of bone is tumor resection with adequate margins of normal tissue. The 5-yr survival rate is about 50% in adults (greater than 21 yr old) and 35% in younger patients; this tumor tends to be histologically more malignant and biologically more aggressive in young patients and chemotherapy and RT are of little value. Recommended treatment for malignant giant cell tumors of bone is cryosurgery and curettage. More radical surgery and postoperative chemotherapy (eg, MTX and CF) are indicated for the rare Grade III giant cell tumors. Recommended treatment for Ewing's sarcoma of bone is high-dose RT (if possible, combined with surgery) and chemotherapy to prevent dissemination to other bones and the lung. Treatment of benign bone and soft tissue tumors and of non-Hodgkin's lymphomas, angiosarcomas, and mesenchymal chondrosarcomas of bone are also discussed. (437 Refs)

96. CUTANEOUS MELANOMA.

Mastrangelo MJ, Rosenberg SA, Baker AR, Katz HR
Fox Chase Cancer Center, Temple Univ. Sch. Medicine, Philadelphia, PA
Cancer - Principles and Practice of Oncology. DeVita VT, Hellman S, and Rosenberg SA, ed. Philadelphia, Lippincott, 1926 pp., 1982.

Cutaneous melanoma is discussed with respect to embryology, epidemiology, etiology, classification, clinical diagnosis, differential diagnosis, prognostic factors, treatment of the primary site, treatment of regional lymph nodes, regional perfusion, follow-up, treatment of disseminated disease, occult disease, and tumors arising at unusual sites. Wide excision is the treatment of choice for clinically localized tumors. The roles of curative radiotherapy (RT), immunotherapy, and chemotherapy in these patients require further investigation. Patients with clinical Stage I disease and clinically negative regional lymph

nodes do not benefit from prophylactic regional lymph node dissection (RLND), even if the tumors are deeply invasive. Careful observation and therapeutic RLND are adequate for these patients. Treatment with dacarbazine (DTIC) and/or BCG does not seem to prevent recurrences in high-risk patients who had been rendered disease-free (NED) by surgery. Regional perfusion of drugs may be effective against in-transit metastases, but wide excision is probably as effective as perfusion in patients with otherwise resectable melanomas of the extremities. Surgical treatment of Stage III disease may involve resection of tumor masses that can leave the patient clinically NED. Palliative RT can be used in the treatment of soft tissue, bone, visceral, and CNS metastases. DTIC is the most active single agent for the treatment of advanced melanomas. The second choice of chemotherapy is a po nitrosourea. Further research is needed to identify more effective protocols of chemotherapy, hormone therapy, and localized or systemic immunotherapy of cutaneous melanomas. (530 Refs)

97. NEOPLASMS OF THE CENTRAL NERVOUS SYSTEM.

Kornblith PL, Walker MD, Cassady JR
Surgical Neurology Branch, Natl. Inst. Neurological and Communicative Disorders and Stroke, Bethesda, MD
Cancer - Principles and Practice of Oncology. DeVita VT, Hellman S, and Rosenberg SA, ed. Philadelphia, Lippincott, 1926 pp., 1982.

Biological, anatomical, and pathological considerations of primary CNS neoplasms are discussed, and clinical pictures of the tumors as a group are described. Topics include epidemiology (genetics, chemical, viral, trauma), incidence, anatomic considerations, pathology (gliomas: astrocytoma, oligodendroglioma, medulloblastoma, ependymoma; neural series; acoustic schwannomas; meningiomas; pituitary tumors; craniopharyngiomas; chordomas; primary lymphomas; pineal area tumors; vascular tumors; and colloid cysts), natural history (pathogenesis, patterns of spread, clinical presentation, methods of diagnosis), treatment (intracranial tumors, radiation therapy, general principles of chemotherapy, spinal cord tumors), and future considerations (limitation of present technics for malignant tumors, role of early diagnosis, surgical treatment, radiation therapy, chemotherapy, and immunotherapy). (302 Refs)

98. CANCERS OF CHILDHOOD.

Simone JV, Cassaday JR, Filler RM
St. Jude's Children's Res. Hosp., Memphis, TN
Cancer - Principles and Practice of Oncology. DeVita VT, Hellman S, and Rosenberg SA, ed. Philadelphia, Lippincott, 1926 pp., 1982.

Childhood cancers are reviewed with respect to etiology, clinical features, diagnosis, prognostic factors, and treatment. Chemotherapy, surgery, and radiotherapy of pediatric tumors are discussed. Childhood leukemias, non-Hodgkin's lymphoma (T-cell lymphoblastic lymphoma of the mediastinum, Burkitt lymphoma, non-Hodgkin's lymphoma of the bone), neuroblastoma, Wilms' tumor, rhabdomyosarcoma, Ewing's sarcoma, hepatic tumors, retinoblastoma, germ cell tumors (sacrococcygeal teratoma, germ cell tumors of the testis), and histiocytosis X are discussed. In general, childhood cancers are more responsive to current therapeutic methods than tumors in adults. Remarkable therapeutic success has been achieved in Wilms' tumors, acute lymphocytic leukemia, retinoblastoma, and lymphoma. Studies of childhood leukemias have been useful for testing hypotheses of cancer therapy generated in animal systems. Once an effective therapy has been discovered for an almost universally fatal malignancy, then modifications can be studied to minimize the physical and psychosocial late effects. Because it appears closer to the etiological event in time, childhood cancer has provided an opportunity to study associations and potential etiological factors. Complex schema of etiology have been proposed, sometimes involving two or more events for cancer to develop. (503 Refs)

99. HODGKIN'S DISEASE AND THE NON-HODGKIN'S LYMPHOMAS.

DeVita VT, Hellman S
NCI, Bethesda, MD
Cancer - Principles and Practice of Oncology. DeVita VT, Hellman S, and Rosenberg SA, ed. Philadelphia, Lippincott, 1926 pp., 1982.

Hodgkin's disease (HD) and the non-Hodgkin's lymphomas (NHL) are discussed with respect to etiology and epidemiology, pathology, natural history, disease evolution, diagnosis and staging, clinical staging, immunologic abnormalities, radiation therapy of HD, chemotherapy of NHL, current recommendations for treatment of HD by stage, the place of radiation in the treatment of NHL, combination chemotherapy of NHL, and special considerations in the treatment of patients with advanced diffuse large cell lymphomas. Currently, 70% of patients with HD and 50% with NHL are curable. Of the five different pathologic classifications for malignant lymphoma in use throughout the world, that of Rappaport is the most widely used for clinical-pathologic studies and is described in detail. Clinical and pathological Stage I and IIA HD should be treated with mantle and paraaortic field radiation and, in patients with lymphocyte depleted histology, total nodal irradiation (TNI) and chemotherapy. Stages I and IIA disease with large mediastinal masses may be treated by a variety of methods, including combination chemotherapy (CC) with radiation (R) to areas of bulk disease, R as in other Stage I and IIA patients then salvage chemotherapy or chemotherapy alone. Pathological Stage IIB should be treated with subtotal nodal irradiation, while those with clinical Stage IIB should receive TNI with or without chemotherapy. Combination TNI and CC should be used for patients with pathological stage IIIA. Stage IIIB patients should receive CC with or without R. Stage IVA and IVB patients should receive CC. Nodular Lymphoma Stage I and II should receive localized R. Stages III and IV should be entered on clinical trials. Diffuse lymphoma Stage I and II should received local R; all others should receive CC. (484 Refs)

100. SOME ASPECTS OF CANCER EPIDEMIOLOGY.

Lilienfeld AM
Sch. Hygiene and Public Health, Johns Hopkins Univ., 615 N. Wolfe St., Baltimore, MD, 21205
Biometrics; 38(Suppl):155-160 1982

Epidemiologic studies have strongly suggested that a vast majority (80-90%) of cancers are caused by radiation, chemical and biologic agents; the remainder result from endogenous or genetic factors. Biologically, cancer is most probably the end result of a complex multistage process and therefore may be due to a sequence of exposures to different agents at each of these stages. This emphasizes the need to stress the study of interactions in epidemiologic studies to a greater extent than has been done thus far. Examples of the importance of interactions in several types of cancer are presented. (Author abstract) (8 Refs)

101. CARCINOGENESIS AND CURRENT HYPOTHESIS ON THE TUMOR-HOST INTERACTIONS.

Neiman IM
No affiliation given
Patol Fiziol Eksp Ter; (2):63-70 1981

Current theories of cancer etiology are reviewed with special emphasis on the role of tumor-host interactions and genetic predisposition of the host. It was suggested that exogenous factors (chronic inflammations, chemical and physical carcinogens, oncogenic viruses) can induce the precancerous conditions. Cancer development requires specific malignant transformation, which can take place only in tissues with genetic predisposition. (27 Refs) (In RUS)

102. EPIDEMIOLOGY AS A GUIDE TO HEALTH POLICY.

Terris M
Journal of Public Health Policy, 23 Pheasant Way, South Burlington, VT, 05401
World Health Forum; 2(4):551-562 1981

Medical care is analyzed with respect to infectious and noninfectious diseases, the second epidemiologic revolution, 'scientific' obstacles to health policy (HP), vested interests and HP, ideological obstacles to HP, HP based on epidemiology, control of the environment, screening, health education, epidemiology-based HP: benefits and costs, and funding the policy. The criticism has been made that preventive programs will simply save people now to die later at greater cost to society. Such a negative attitude towards prevention is thought based on a static view of both costs and benefits. Controlled outcome studies have already demonstrated the value of screening for hypertension and breast cancer. (9 Refs)

103. RESEARCH ON THE MENOPAUSE.

WHO Scientific Group on Research on the Menopause, Bancroft J, Burger HG, Devi PK, Mack TM, Nordin BE, Nylander P, Ryan KJ, Sas M, Sinnathurzy TA
World Health Organization, Geneva, Switzerland
WHO Tech Rep Ser (670): 120 pp., 1981.

The controversy over the existence of a menopausal syndrome of somatic and psychological symptoms and illness and the lack of data on the age distribution of menopause (MP) and on menopausal sociocultural significance in developing countries are discussed. The endocrinology of MP, age distribution, sociocultural significance of MP in different settings, symptoms associated with MP, disorders resulting from or possibly accelerated by MP, risks of therapeutic estrogens and progestins to peri- and postmenopausal women with particular reference to neoplasia, fertility-regulating methods for women approaching MP, and estrogens and the health care management of peri- and postmenopausal women are reported. Summaries of three studies of endometrial carcinoma conducted before 1975 and of case-control studies of endometrial cancer (EC) with epidemiological details are presented. Two major areas of ignorance in regard to risks of EC associated with estrogen therapy are the persistence of the oncogenic effect, and the nature of the dose-response curve at low doses and duration of use. Epidemiology of breast cancer (BC) is even more suggestive of endocrine origins than that of EC. Risk is related to a variety of endocrine phenomena, including ages at menarche, MP, and first pregnancy. Early oophorectomy has long been recognized to be strongly protective. Cohort studies and case-control studies of estrogen therapy and BC are presented. Several mechanisms for the relationship between endogenous hormones and BC have been proposed. Both naturally occurring and synthetic estrogens and progestins appear under some circumstances to be carcinogenic for BC in animal species. (383 Refs)

104. THE SAME EVIDENCE - WHY DIFFERENT CONCLUSIONS?

Walker AR
South African Inst. for Medical Res., P.O. Box 1038, Johannesburg 2000, South Africa
S Afr J Sci; 77(12):534-537 1981

Controversy exists as to the etiology of cancer and coronary heart disease and roles of dietary fiber and sugar in health and disease. The same body of evidence may be analyzed by different researchers with a different conclusion by each. As an example, out of all deaths from lung cancer in the United States, 20% occur in nonsmokers. A large proportion of cancer related deaths must occur independent of smoking and life style. One group contends that occupational carcinogens are vastly underestimated while another contends that this view is not mutually exclusive. The role of diet in coronary heart disease is also discussed in the light of recent epidemiologic statistics. (65 Refs)

105. ENVIRONMENTAL FACTORS AND MALIGNANT HEMATOLOGICAL DISEASES.

Bjorkholm M
Hemataologsektionen, Danderyds sjukhus, Danderyd, Sweden
Lakartidningen; 79(15):1457-1459 1982

Environmental factors and their possible or demonstrated etiological role in malignant hematological diseases are reviewed. Ionizing radiation is a well-established cause of leukemia, but no relationship between exposure to such radiation and chronic lymphocytic leukemia was found. Benzene is considered as a leukemogenic factor, even though it was not possible to induce leukemia with benzene in experimental animals. Environmental factors during childhood may play a role in the development of Hodgkin's disease. (44 Refs) (In SWE)

106. SIGNIFICANCE OF ENVIRONMENTAL FACTORS FOR THE DEVELOPMENT OF LEUKEMIA, MYELOMA AND MALIGNANT LYMPHOMA.

Brandt L
Onkologiska kliniken, Lasarettet, Lund, Sweden
Lakartidningen; 79(15):1490-1492 1982

Studies on environmental factors in the etiology of leukemias, myelomas and lymphomas are reviewed. Ionizing radiation plays a role in the development of acute myeloid leukemia, acute lymphocytic leukemia, chronic myeloid leukemia, myeloma, Hodgkin's disease and non-Hodgkin's lymphomas, but probably none in chronic lymphocytic leukemia. Viral etiology of chronic lymphocytic leukemia in farm workers and of Burkitt's lymphoma and of other non-Hodgkin's lymphomas is suspected. Hodgkin's disease was found to be overrepresented among men exposed to chemicals. (35 Refs) (In SWE)

107. CURRENT CONCEPTS OF THE ETIOLOGY AND PATHOGENESIS OF LUNG CANCER.

Chaklin AV, Gritsiute LA
No affiliation given
Vopr Onkol; 28(2):3-9 1982

Literature data on the role of smoking and environmental pollutants in the etiology of lung cancer (LC) are reviewed. Epidemiological studies showed the relationship between the smoking and incidence of LC. LC morbidity in 45-64 yr old men increased from 1.4 per 100,000 for nonsmokers to 5.9 for those who smoked 5 cigarettes/day, 13.5 for those who

smoked 6-16 cigarettes/day, 29.5 for those who smoked 25-56 cigarettes/day, and 47.4 for those who smoked greater than 56 cigarettes/day. Carcinogenicity of tobacco tar is associated with the presence of polycyclic hydrocarbons, N-nitrosamines, vinyl chloride, phenols, and various co-carcinogens. Recent studies showed the carcinogenic effect of 'passive' smoking. Increased LC morbidity in the regions with intensive chemical industry indicates the co-carcinogenic effect of such air pollutants as sulfur dioxide. Pathogenesis of LC is associated with the history of chronic lung inflammation, tuberculosis, scleroderma, exposure to asbestos, immunologic suppression, and individual activity of aryl hydroxylase. (45 Refs) (In RUS)

108. AXIOMS ON GASTRIC CARCINOMA.

Fierst SM
State Univ. New York, Downstate Medical Center, Brooklyn, NY
Hosp Med; 18(4):36E-36F,36J-36K,36N-36O,36R-36S,36V-36W 1982

Important correlations and predispositions in gastric carcinoma include pernicious anemia, sex, familial disposition, ethnogenetic factors, foods, socioeconomic status, and work environment. Carcinomas of the stomach are typically in the lower half, and may be accompanied by atrophic gastritis; cancers may be polypoid, ulcerating, or infiltrative. Prognosis is difficult for the infiltrative type. Symptoms most often seen include weight loss (80-90%), dysphagia (91%), pain (50-70%), and occul: bleeding (65%). Diagnostic approach should include history and physical assessment, examination for occult blood in the stool, gastric analysis, upper gastrointestinal series, fiberoptic endoscopy, and cytologic examination. Early surgical extirpation of the cancer is the only treatment promising a cure at the present time. Chemotherapy with 5-fluorouracil, doxorubicin, and mitomycin seems to be the most promising combination, and is well tolerated. Immunotherapy with levamisole, Freund's adjuvant, BCG, and tumor vaccines have also been tried, but adequate controlled clinical studies have been too few to draw conclusions. (26 Refs)

109. HIGH RISK FACTORS IN LUNG CANCER.

Valentino B, Vigorito F, Lepparelli G, Moscariello E, Leita L, Valentino D
III Divisione di Pneumologia, Ente Ospedaliero 'V. Monaldi', Napoli, Italy
Rass Int Clin Ter; 61(16):1105-1113 1981

Risk factors in pulmonary cancer were discussed including occupational factors, air pollution, smoking, radiation, sex, and age. Changes induced in respiratory passages by different environmental factors and diseases, and their synergistic action were considered. (35 Refs) (In ITA)

110. CURRENT CONCEPTS IN OTOLARYNGOLOGY. RISK FACTORS IN HEAD AND NECK CANCER.

Decker J, Goldstein JC
(c/o Goldstein) Dept. Surgery, Div. Otolaryngology, Albany Medical Coll., Albany, NY, 12208
N Engl J Med; 306(19):1151-1155 1982

As many as 90% of head and neck cancers arise in susceptible persons after prolonged exposure to known environmental factors; current concepts regarding these risk factors are reviewed. Lip cancers are found predominantly in white men, and the lower lip is more often involved; prolonged and intense exposure to the sun, use of tobacco, and various oral disorders are risk factors. Oral cavity and pharynx cancers are promoted by tobacco and alcohol use, and there are significant cultural and geographical variations in incidence. The major risk factors in cancer of the larynx are tobacco and alcohol; risk declines after cessation of smoking. Nasopharynx, nose, and paranasal sinus cancers are distinct from other head and neck cancers because they are not tobacco-related. Most are histopathologically distinct (non-keratinizing squamous cell-carcinoma or lymphoepithelioma) and frequently occur in a younger age group. Both genetic factors and Epstein-Barr virus have been associated with cancers in this group. Although environmental causes account for most head and neck cancers, there are considerable differences in individual susceptibility to these diseases, such as in medullary carcinoma of the thyroid associated with pheochromocytoma and parathyroid neoplasia (Sipple's syndrome) or cutaneous cancers in patients with xeroderma pigmentosa. (45 Refs)

111. MONITORING GUIDELINES FOR THE CONDUCT OF CARCINOGEN BIOASSAYS.

National Toxicology Program, Douglas JF, Hamm TE, Jameson CW, Mahar H, Stinson S, Whitmire CE
NCI/Natl. Toxicology Program, NIH, Bethesda, MD, 20205
Natl Toxicol Program Tech Rep Ser (218): 80 pp., 1981.

Formal guidelines for the monitoring of carcinogen bioassays, particularly in small rodents, are presented. Monitoring is conducted to ensure that the tests are adequately performed to a specific protocol and that the data as reported are valid. Offsite and onsite monitoring is discussed with respect to selection and preparation of the monitoring team. An outline for collecting important information during pre-award site visits on personnel, facilities, protocols, and record keeping as they relate to the bioassay program of the contract laboratories is presented. Questions to be answered concerning the contractor's organization, animal care, chemistry, health and safety, pathology, and toxicology are listed. Offsite and onsite monitoring are outlined with respect to animal care, chemistry, health and safety monitoring, pathology, and toxicology. A checklist for the laboratory monitor includes questions for administrators, shipping, receiving, and storage, chemistry, facilities and testing (general), chemical storage, animal care and handling, decommissioning (specific bioassay test terminations), dosed feed, wash room, cage emptying/washing area, gavage, skin painting, gavage/ip/skin painting, dose preparation, chemical/vehicle analysis, housekeeping, necropsy, histopathology, and histology. (no Refs)

112. EVALUATION OF THE NEW NCI TOXICOLOGY PROTOCOL: USE OF THE MOUSE AS A PREDICTOR OF TOXICITY IN DOGS (MEETING ABSTRACT)

Greenspun KS, Frick S, Whalan J, Inkster L, Kastello M, Stephen E
Battelle Toxicology Program Office, Vienna, VA, 22180
Proc Am Assoc Cancer Res; 23:883 1982

The new NCI Toxicology Protocol used to preclinically evaluate antineoplastic compounds includes the following objectives: 1) to determine toxic effects in dogs and the reversibility of effects using doses defined in mice based on body surface area, and 2) to verify the safety of 1/10 the mouse equivalent (ME) LD10 given to dogs. CDF1 mice are given a single (x1) or five daily doses (x5) of a compound and the LD90, LD50, and LD10 are defined. Beagle dogs are given the MELD10 and 1/10 MELD10 in both x1 and x5 schedules. Depending on results, the MELD10 is increased to obtain frank toxicity or decreased to obtain reversible toxicity, or the 1/10 MELD10 is decreased to obtain a safe dose. We studied the following compounds (by iv injection): WR2721, Henkel, n-methylformamide, cytoxan, echinomycin, homo-harringtonine,

tricyclic nucleoside (pentaazaacenaphylene 5' phosphate ester), dihydro-5azacytidine HCl and 4-thiazolecarboxamide, 2-B-D-ribofuranosyl (TCAR). Only the x1 schedule was studied for WR2721. For TCAR, up to 10x MELD10 was given x1 and frank toxicity was not observed. In 94% of the studies the mice were able to predict doses for dogs in which effects and reversibility could be determined. In 100% of the studies, the mice predicted the safe dose in dogs to be the 1/10 MELD10. Only 3 doses were needed in 76% of the studies to accomplish the objectives of the protocol. Based on these findings, we are satisfied that the mouse is a good pedictor of doses to evaluate safety and toxicity of antineoplastics in dogs. (no Refs)

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NOTICE OF CURRENT REVIEWS: CARCINOGENESIS

As an additional service to readers of carcinogenesis (CK series) CANCERGRAMS, each issue now provides a bibliography of review articles of interest to carcinogenesis researchers, selected from journals screened for that month's CANCERGRAMS.

CHEMICAL CARCINOGENESIS

1. MICROWAVE HEATING ENHANCES THE MIGRATION OF PLASTICIZERS OUT OF PLASTICS.
Bishop CS, Dye A
East Tennessee State Univ., Johnson City, TN, 37614
J Environ Health; 44(5):231-235 1982

2. DISEASES CAUSED BY EPOXY RESINS.
Konietzko H, Fischer G
Institut fur Arbeits- und Sozialmedizin, Johannes-Gutenberg-Universitat, Obere Zahlbacher Strasse 67, D-6500 Mainz, W. Germany
Zentralbl Arbeitsmed Arbeitsschutz Proph; 32(3):86-91 1982
In GER

3. NITROSAMINES.
Aigner K
Pneumonologische Abteilung, Krankenhaus der Elisabethinen, Fadingerstr. 1, A-4020 Linz-Donau, Austria
Wien Med Wochenschr; 132(71,Suppl):75-79 1982
In GER

4. EXPERIMENTAL TUMORS OF THE PERIPHERAL NERVOUS SYSTEM.
Beniashvili DS
Cancer Res. Center, Tbilisi, USSR
Eksp Onkol; 4(2):12-19 1982
In RUS

5. MUTAGENIC, CARCINOGENIC AND TERATOGENIC EFFECTS OF STYRENE.
Sram RJ, Pohlova H, Topinkova E
Klinika hygieny a epidemiologie, Srobarova 48, 100 42 Prague 10, Czechoslovakia
Prac Lek; 34(2):68-72 1982
In CZE

6. DIETHYLSTILBESTROL: EFFECT OF IN UTERO EXPOSURE.
Barke L
Obstetrics/Gynecology Dept., Harvard Medical Sch., Boston, MA
Curr Probl Obstet Gynecol; 5(2):1-58 1981

7. IN UTERO EXPOSURE TO DIETHYLSTILBESTROL: ADVERSE EFFECTS ON THE REPRODUCTIVE TRACT AND REPRODUCTIVE PERFORMANCE IN MALE AND FEMALE OFFSPRING.
Stillman RJ
Dept. Obstetrics and Gynecology, George Washington Univ. Sch. Medicine and Health Sciences, 2150 Pennsylvania Ave., NW, Washington, DC, 20037
Am J Obstet Gynecol; 142(7):905-921 1982

8. BIOLOGICAL EFFECTS OF MINERAL WOOL.
Petersen R, Ehrhorn H, Mousing K, Sabroe S, Silberschmid M, Venstrup-Nielsen SE
Socialmedicinsk institut, Vesterbro Torv 1-3, DK-8000 Arhus C, Denmark
Ugeskr Laeger; 144(13):971-975 1982
In DAN

DIETARY FACTORS IN CARCINOGENESIS

9. NATURALLY OCCURRING FOOD TOXICANTS: PHENOLIC SUBSTANCES OF PLANT ORIGIN COMMON IN FOODS.
Singleton VL
Dept. Viticulture and Enology, Univ. California, Davis, CA
Adv Food Res; 27:149-242 1981

10. MUTAGENS, CARCINOGENS, AND TUMOR PROMOTERS IN OUR DAILY FOOD.
Sugimura T
Natl. Cancer Res. Inst., Tsukiji, Chuo-ku, Tokyo, Japan
Cancer; 49(10):1970-1984 1982

11. THE BIOLOGICAL EFFECTS OF CARRAGEENAN AND OTHER SULFATED POLYSACCHARIDES WITH PARTICULAR ATTENTION TO IMMUNOLOGICAL AND CARCINOGENIC PROPERTIES.
Larsen B
Kraeftforskningsinstituttet, DK-8000 Arhus C, Denmark
Ugeskr Laeger; 144(12):860-863 1982
In DAN

12. VARIATIONS AMONG SPECIES AND CELL TYPES IN THE EFFECTS OF CAFFEINE ON MUTAGEN-INDUCED CYTOTOXICITY AND POSTREPLICATION REPAIR OF DNA.
Sivak A, Rudenko L, Teague LG
Arthur D. Little, Inc., Cambridge, MA, 02140
Environ Mutagen; 4(2):143-162 1982

EPIDEMIOLOGY, ETIOLOGY AND GENETIC ASPECTS OF HUMAN CANCER

13. CANCER IN THAILAND: LESSONS FOR CANCER CONTROL.
Miller DG, Somboonchareon S
Strang Clinic, Preventive Medicine Inst., 55 East 34th St., New York, NY, 10016
Prev Med; 11(2):232-239 1982

14. MEASUREMENT OF CANCER INCIDENCE IN THE UNITED STATES: SOURCES AND USES OF DATA.
Greenberg ER, Colton T, Bagne C
Norris Cotton Cancer Center, Dartmuth-Hitchcock Medical Center, Hanover, NH, 03755
JNCI; 68(5):743-750 1982

15. STUDIES OF CANCER EPIDEMIOLOGY IN THE UNITED STATES OF AMERICA.
Lapin IuE
Moscow, USSR
Feldsher Akush; (2):55-57 1982
In RUS

16. CURRENT CONCEPTS OF THE ETIOLOGY AND PATHOGENESIS OF LUNG CANCER.
Chaklin AV, Gritsiute LA
No affiliation given
Vopr Onkol; 28(2):3-9 1982
In RUS

17. ETIOLOGY OF MOUTH AND LIP TUMORS.
Zabezhinskii MA, Godorozha PD
N. N. Petrov Res. Inst. Oncology, Leningrad, USSR
Vopr Onkol; 28(2):105-113 1982
In RUS

18. PSYCHIATRIC ASPECTS OF CANCER.
Peterson LG, Popkin MK, Hall RC
P.O. Box 20708, 6431 Fannin, Houston, TX, 77025
Psychosomatics; 22(9):774-793 1981

19. PREDICTIVE IDENTIFICATION OF HYPERSUSCEPTIBLE INDIVIDUALS.
Omenn GS
Dept. Environmental Health, Univ. Washington, Seattle, WA, 98195
JOM; 24(5):369-374 1982

20. CARCINOGENESIS AND CURRENT HYPOTHESIS ON THE TUMOR-HOST INTERACTIONS.
Neiman IM
No affiliation given
Patol Fiziol Eksp Ter; (2):63-70 1981
In RUS

ENVIRONMENTAL AND OCCUPATIONAL FACTORS IN CARCINOGENESIS

21. POLYCHLORINATED BIPHENYLS (PCBS): AN AUSTRALIAN VIEWPOINT ON A GLOBAL PROBLEM.
Richardson BJ, Waid JS
Marine Science Lab., Ministry for Conservation - Victoria, P.O. Box 114, Queenscliff, Victoria 3225, Australia
Search; 13(1/2):17-25 1982

22. SIGNIFICANCE OF ENVIRONMENTAL FACTORS FOR THE DEVELOPMENT OF LEUKEMIA, MYELOMA AND MALIGNANT LYMPHOMA.
Brandt L
Onkologiska kliniken, Lasarettet, Lund, Sweden
Lakartidningen; 79(15):1490-1492 1982
In SWE

23. ENVIRONMENTAL FACTORS AND MALIGNANT HEMATOLOGICAL DISEASES.
Bjorkholm M
Hematologsektionen, Danderyds sjukhus, Danderyd, Sweden
Lakartidningen; 79(15):1457-1459 1982
In SWE

CELLULAR AND MOLECULAR MECHANISMS IN CARCINOGENESIS

24. REGULATION OF GENE EXPRESSION IN NORMAL AND NEOPLASTIC CELLS: A REVIEW.
Hochhauser SJ, Stein GS, Stein JL
Dept. Biochemistry and Molecular Biology, Univ. Florida, Coll. Medicine, Gainsville, FL, 32610
Pathobiol Annu; 11:1-29 1981

25. WHAT ARE ISOZYMES TELLING US ABOUT GENE REGULATION IN CANCER?
Weinhouse S
Fels Res. Inst., Temple Univ. Sch. Medicine, Health Sciences Center, Philadelphia, PA, 19140
JNCI; 68(3):343-349 1982

26. CHANGES IN AMINO ACID AND SUGAR TRANSPORT ACTIVITY ASSOCIATED WITH MALIGNANT TRANSFORMATION.
Nishino H, Inui K
Dept. Biochemistry, Kyoto Prefectural Medical Univ., Kyoto, Japan
Tanpakushitsu Kakusan Koso; 26(7):881-895 1981
In JPN

27. CURRENT VIEWS ON THE NATURE OF MYOEPITHELIAL CELLS AND THEIR ROLE IN THE MORPHOGENESIS OF DYSHORMONAL HYPERPLASIAS AND BREAST TUMORS.
Karelina TV
Central Lab. Pathology, Inst. Human Morphology, Moscow, USSR
Arkh Patol; 44(2):69-73 1982
In RUS

MODIFICATION OF CARCINOGENESIS

28. OVERVIEW: RETINOIDS AND CARCINOGENESIS.
Schramm T, Coutelle R
Zentralinstitut fur Krebsforschung, Akademie der Wissenschaften der DDR, Lindenberger Weg 80, DDR-1115 Berlin-Buch, E. Germany
Arch Geschwulstforsch; 52(4):323-336 1982
In GER

29. RETINOIDS, URINARY BLADDER CARCINOGENESIS, AND CHEMOPREVENTION: A REVIEW AND SYNTHESIS.
Lower GM, Kanarek MS
Dept. Veterinary Science, Coll. Agricultural and Life Sciences, Univ. Wisconsin, 1655 Linden Drive, Madison, WI, 53706
Nutr Cancer; 3(2):109-115 1981

30. THE ANTITUMOR POLYSACCHARIDE LENTINAN: AN OVERVIEW.
Chihara G
Natl. Cancer Res. Inst., Tsukiji, Tokyo, Japan
Excerpta Med Int Congr Ser; 576:1-16 1981

VIRAL AND IMMUNOLOGICAL ASPECTS OF CARCINOGENESIS

31. ENDOGENOUS ONCOGENIC TYPE B VIRUSES IN MICE.
Komarova EA, Kriukova IN
All-Union Cancer Res. Center, Moscow, USSR
Eksp Onkol; 4(2):3-12 1982
In RUS

32. GENETIC INTERACTIONS BETWEEN TUMOR VIRUSES AND HOST CELLS.
Rowe WP
Lab. Viral Diseases, Natl. Inst. Allergy and Infectious Diseases, NIH, Bethesda, MD, 20205
Cancer; 49(10):1958-1962 1982

33. THE PERSISTENCE OF RETROVIRUSES.
Weiss RA
Chester Beatty Res. Inst., Fulham Road, London SW3 6JB, England
Symp Soc Gen Microbiol; 33:267-288 1982

34. HOW DO PAPOVA VIRUSES PERSIST IN THEIR HOSTS?
Griffin BE
Imperial Cancer Res. Fund, Lincoln's Inn Fields, London WC2A 3PX, England
Symp Soc Gen Microbiol; 33:227-247 1982

35. THE EPSTEIN-BARR VIRUS: HISTORICAL, BIOLOGIC, PATHOLOGIC AND ONCOLOGIC CONSIDERATIONS.
Seemayer TA, Oligny LL, Gartner JG
Dept. Pathology, Montreal Children's Hosp., Montreal, Quebec, Canada
Perspect Pediatr Pathol; 6:1-33 1981

36. KAPOSI'S SARCOMA: WHY A 'HOMOSEXUAL DISEASE'?
Groopman JE, Gottlieb MS
Div. Hematology-Oncology, Univ. California at Los Angeles Sch. Medicine, Los Angeles, CA
Hosp Pract; 17(5):64F-64G,64J,64N,64O,64R,64T 1982

METHODOLOGY IN CARCINOGENESIS RESEARCH

37. MAJOR APPROACHES TO THE EXPERIMENTAL STUDY OF LUNG CANCER.
Pliss GB, Turusov VS, Zabezhinskii MA
No affiliation given
Vopr Onkol; 28(2):18-22 1982
In RUS

38. ON THE NECESSITY OF MUTAGENICITY TESTING OF NEW DRUGS.
Bogajewski J, Schoneich J
Zaklad Genetyki Czlowieka, PAN, 60-479 Poznan, Poland
Pol Tyg Lek; 37(2):63-67 1982
In POL

OTHER REVIEWS IN CARCINOGENESIS

39. CANCER - PRINCIPLES AND PRACTICE OF ONCOLOGY.
DeVita VT, Hellman S, Rosenberg SA

NCI, Bethesda, MD
Cancer - Principles and Practice of Oncology. Philadelphia, Lippincott, 1926 pp., 1982.

40. MOVABLE GENETIC ELEMENTS.
Watson JD
Cold Spring Harbor Lab., Box 100, Cold Spring Harbor, NY, 11724
Cold Spring Harbor Symp Quant Biol 45(part 1): 445 pp., 1981.

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ENVIRONMENTAL AND OCCUPATIONAL CARCINOGENESIS

SERIES CK02 No. 82/10

OCTOBER, 1982

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ENVIRONMENTAL FACTORS: POLLUTION

1. ANALYSIS OF POLYCYCLIC AROMATIC HYDROCARBONS IN MUSSELS (MYTILUS GALLOPROVINCIALIS) FROM THE THERMAIKOS GULF, GREECE.

Iosifidou HG, Kilikidis SD, Kamarianos AP
Dept. Food Hygiene, Aristotelian Univ., Thessaloniki, Greece
Bull Environ Contam Toxicol; 28(5):535-541 1982

Gas chromatographic analysis of mussels of the Thermaikos Gulf, an area known to be contaminated with petroleum hydrocarbons, showed that the mussels are contaminated with 17 polycyclic aromatic hydrocarbons (PAH). These included the

HE 20.3173/2:

following carcinogenic compounds: benzo(a)pyrene, benzo(a)anthracene, dibenzo(a,c)anthracene + dibenzo(a,h)anthracene, dibenzo(a,l)pyrene, dibenzo(a,i)pyrene, and TP + CH. The concentrations of total PAH and carcinogenic PAH in the mussels were 91 and 19 nanog/g wet wt, respectively. A positive correlation was shown between the levels of total PAH and carcinogenic PAH in mussels and industrial activity in two different areas of the gulf. (13 Refs)

2. CONTAMINATION OF NATIVE FISH STOCK BY HEXACHLOROBENZENE AND POLYCHLORINATED BIPHENYL RESIDUES.

Brunn H
Staatliches Veterinaruntersuchungsamt Giessen, Marburger Strasse 54, 6300 Giessen, W. Germany
Bull Environ Contam Toxicol; 28(5):599-604 1982

Almost 92% of the sampled fish from inland waters of West Germany contained residues of hexachlorobenzene (HCB) at an av concentration of 0.349 mg/kg of fat or 0.005 mg/kg body wt. Polychlorinated biphenyl (PCB) residues were found in all fish analyzed at an av concentration of 27.444 mg/kg of fat or 0.454 mg/kg body wt. For both HCB and PCB, the contamination was highest in fish living in rivers and streams, and lower in fish from ponds with or without connection to flowing water. (11 Refs)

3. ORGANIC CONSTITUENTS OF MUTAGENIC SECONDARY EFFLUENTS FROM WASTEWATER TREATMENT PLANTS.

Ellis DD, Jone CM, Larson RA, Schaeffer DJ
(c/o Larson) Inst. Environmental Studies, Environmental Res. Lab., Univ. Illinois, 1000 West Western Ave., Urbana-Champaign, IL, 61801
Arch Environ Contam Toxicol; 11(3):373-382 1982

The tentative identification by gas chromatography-mass spectrometry of 243 organic compounds from 10 municipal and industrial waste effluent sites is reported. Ten of the identified compounds were EPA priority pollutants. Only dimethyl-N-nitrosoamine and ortho-toluidine were known carcinogens or mutagens. Most of the identified compounds, however, have not been tested for carcinogenicity/mutagenicity. (24 Refs)

4. OCCURRENCE OF BROMINATED ALKYLPHENOL POLYETHOXY CARBOXYLATES IN MUTAGENIC WASTEWATER CONCENTRATES.

Reinhard M, Goodman N, Mortelmans KE
Environmental Engineering and Science, Dept. Civil Engineering, Stanford Univ., Stanford, CA, 94305
Environ Sci Technol; 16(6):351-362 1982

Mutagenicity data obtained during a 1.5 yr study on effluents from the Orange County, Southern California, Water Factory 21 (WF21) were presented. Mutagenic activity was determined with Salmonella typhimurium strain TA100. Organics were concentrated by adsorption on Amberlite XAD-8 ion-exchange resins, ultrafiltration, and gaseous purging. Direct mutagenicity was detected only in the concentrates from XAD-8; in all other concentrates, the response was negative. Samples were up to 1 gallon in size. The data from the XAD-8 concentrates were emphasized and the chemical characterization of the mutagenic extracts was discussed. The activity of direct acting mutagens appeared to increase at the recarbonation stage, where 6-10 mg/liter of chlorine was added. Subsequent activated carbon treatment removed activity effectively. Final chlorination typically with 25 mg/liter of chlorine led to the reoccurrence of mutagenicity. Mutagenicity was found in organic fractions primarily containing carboxylic acids including brominated and nonbrominated alkylphenol polyethoxy carboxylic acids (BrAPEC and NBrAPEC). Potential mutagenicity of the BrAPEC was suggested, but preliminary experiments failed to confirm this hypothesis. (45 Refs)

5. PULMONARY ASBESTOS AND DUST CONTENT IN EAST ANGLIA.

Stovin PG, Partridge P
Sims Woodhead Memorial Lab., Papworth Hosp., Papworth Everard, Cambridge CB3 8RE, England
Thorax; 37(3):185-192 1982

Measurements were made of the asbestos fiber and dust content of samples from 96 surgically excised lungs; 42 necropsies on patients with lung cancer, 11 necropsies on patients with non-pulmonary malignancies, and 59 necropsies on patients without any malignant disease. The patients' ages ranged from 45 to 74 years at the time of study. None of the patients had asbestosis. The distribution of fibers and dust content of the lungs showed a log-normal distribution. There was no significant difference in fiber counts or dust content between men and women, and between lung cancer and non-cancer patients. The only group with an association with a high asbestos fiber count was four necropsy cases of pleural mesothelioma. There was no significant relationship between asbestos fiber count and dust content of the lung. The present data suggest that asbestos fiber counts below 100,000/g of dried lung are not related to specific asbestos disease, although in the surgical cases who were closely questioned on their residential and occupational histories, most of those with fiber counts above 30,000/g dried lung had had occasions of definite or very likely asbestos exposure. (Author abstract) (21 Refs)

6. CHLOROFORM: A REVIEW OF ITS METABOLISM, TERATOGENIC, MUTAGENIC, AND CARCINOGENIC POTENTIAL.

Davidson IW, Sumner DD, Parker JC
(c/o Parker) ECAO, Environmental Protection Agency, MD-52, Research Triangle Park, MD, 27711
Drug Chem Toxicol; 5(1):1-87 1982

The toxicology of chloroform is reviewed in detail. Included are discussions of the following: absorption routes (oral and pulmonary); tissue distribution; excretion (pulmonary and other routes, bioaccumulation); biotransformation (known metabolites, magnitude of chloroform metabolism, enzymatic pathways of biotransformation); covalent binding (proteins and lipids, including differences due to genetic strains, sex, interspecies, and age; binding to nucleic acids; role of phosgene; role of glutathione); mutagenicity in vitro and in vivo; carcinogenicity (animal and epidemiological studies); teratogenicity; and risk considerations (one-hit and multi-hit models). The potential of adverse health effects from exposure to chloroform in the environment is of increasing concern. (162 Refs)

7. THE HEALTH EFFECTS OF COAL-BURNING POWER PLANTS IN MINNESOTA.

Ross D
Minnesota Public Interest Res. Foundation, Minneapolis, MN
The Health Effects of Coal-Burning Power Plants in Minnesota. Available from National Technical Information Service, Springfield, VA, as PB82-158544:, 54 pp., 1981.

The carcinogenic properties of coal combustion products are described and documented with emphasis on beryllium, mercury, and other particulates. Increased coal use in Minnesota and implications of such increases for 1976-1995 are discussed. Details of how a coal-fired power plant works and how pollutants are formed are described. Efforts to minimize health impacts of sulfur oxides and particulates are detailed. An analysis is provided of how health impacts are measured, showing how a lack of precision and data makes it difficult for policymakers to decide which pollutants need regulation and how much regulation is required. It was found that the greatest problem resulting from coal burning in Minnesota is fine particulate pollution. Fine particulates have been implicated in the exacerbation of emphysema, bronchitis, and lung cancer. Increased regulation and limitations on the construction of coal burning electricity generators are supported. (Author abstract)

8. THE GEOGRAPHICAL DISTRIBUTION OF HIGH CADMIUM CONCENTRATIONS IN THE ENVIRONMENT AND PROSTATE CANCER IN ALBERTA.

Bako G, Smith ES, Hanson J, Dewar R
Dept. Epidemiology, Provincial Cancer Hospitals Board, 11560 University Ave., Edmonton, Alberta T6J 1Z2, Canada
Can J Public Health; 73(2):92-94 1982

Cadmium concentrations were mapped for 982 samples of flowing fresh water, municipal waste water, soil, wheat and barley in Alberta. Incidence of prostate cancer per 100,000 individuals, was 35.6 for all urban communities. The rate was significantly lower (10.6) in the low-Cd community of Camrose, and significantly higher (53.2) in the high-Cd community of Medicine Hat. (10 Refs)

9. INDOOR AIRBORNE ASBESTOS POLLUTION: FROM THE CEILING AND THE FLOOR.

Sebastien P, Bignon J, Martin M
Laboratoire d'Etude des Particules Inhalees, Direction des Affaires Sanitaires et Sociales de Paris, 44, rue Charles Moureu, 75013 Paris, France
Science; 216(4553):1410-1413 1982

Electron microscopic measurements of the concentrations of airborne asbestos were carried out inside and outside an office building having ceilings sprayed with a crocidolite-containing material and floors covered with vinyl-chrysotile tiles. Under normal conditions in this building, constructed 10 yr ago, the two asbestos-containing materials released fibers into the air. This is the first measurement of elevated (up to 170 nanograms per cubic meter) concentrations of indoor airborne asbestos associated with the weathering of asbestos floor tiles during their service life. Asbestos flooring is used in a large number of buildings and represents the third largest use of asbestos fibers in the United States and in Europe, ranking after roofing and asbestos-cement pipe. (Author abstract) (10 Refs)

ENVIRONMENTAL FACTORS: COMMERCIAL PRODUCTS

10. SMOKING AND CANCER.

Lapis K
No affiliation given
Magy Tud; 89(2):119-127 1982

Epidemiological and etiological relationships between smoking and cancer, especially lung caner, are discussed. The carcinogenic substances occurring in tobacco and cigarette smoke include polycyclic aromatic hydrocarbons, such as benzo(a)pyrene, N-nitrosamines, such as N-nitrosonornicotine, and 210-polonium. Increased incidence of cancer of the larynx, pharynx, lips, oral cavity, tongue, esophagus, urinary bladder, pancreas, and especially lung was observed among smokers compared with nonsmokers. (no Refs) (In HUN)

11. CIGARETTE TAR EXPOSURE AND OCCUPATION IN FEMALE LUNG CANCER PATIENTS.

Vutuc C, Kunze M
Dept. Social Medicine, Inst. Hygiene, Univ. Vienna, Vienna, Austria
Excerpta Med Int Congr Ser; 558:41-48 1982

Two-hundred female patients with histologically and/or cytologically verified bronchogenic carcinoma were interviewed in a case control study using a standardized questionnaire. For each patient two controls not suffering from a tobacco related disease at the time of interview and matched by age were interviewed. Sixty-five percent of patients had Kreyberg I tumor and 35% had Kreyberg II tumor. The median age at time of diagnosis was 66.8 yr. Most of the patients were in the age group 60-69 yr and 92% of Kreyberg I patients were older than 50 yr compared to 86% of Kreyberg II patients. Significantly more cigarette smokers were among the patients than among the controls. The proportion of ex-smokers did not differ significantly in any subgroup of patients and controls. The av duration of ex-smoking was significantly shorter among lung cancer patients (av 5 yr) than that among controls (av 12 yr). Ex-smoking females suffering from Kreyberg I tumor reported a significantly shorter time of not smoking (4 yr) than ex-smoking controls or ex-smoking Kreyberg II patients (av 9 yr). Significantly more patients than controls preferred high tar cigarettes. Female lung cancer patients who smoked differed from smoking controls by longer smoking histories, and higher daily consumption of very high tar and low tar cigarettes. Female lung cancer patients (74%) more often than controls (64%) reported occupations other than housewives. No significant differences in the frequency of occupations between the patients and controls were observed. (18 Refs)

12. CAFFEINE: AN UPDATE.

Oser BL, Ford RA
Bernard L. Oser and Associates, 108-18 Queens Blvd., Forest Hills, NY, 11375
Drug Chem Toxicol; 4(4):311-329 1981

Intake patterns, pharmacokinetics and metabolism, reproduction and teratology, behavioral effects, and epidemiology of caffeine as a component of beverages are reviewed. Reproductive and teratologic studies are questioned with respect to the applicability of animal studies to humans. No evidence for carcinogenicity of caffeine in long-term studies has been published. No available epidemiological study reveals convincing evidence of carcinogenicity, teratogenicity, or adverse behav-

ioral effects from caffeine ingestion in soft drinks, coffee, or tea. (54 Refs)

13. SMOKING AND LUNG CANCER: WOMEN OF MEXICAN ORIGIN (MEETING ABSTRACT)

Holck SE, Warren CW, Rochat RW, Smith JC
Centers for Disease Control, Atlanta, CA
109th Annual Meeting of the American Public Health Association, November 1-5, 1981, Los Angeles, California. American Public Health Association 390 pp., 1981.

Smoking is recognized to be an important public health problem, but neither smoking habits nor recent lung cancer mortality rates have been described for Hispanic women of Mexican origin. In 1979, the Centers for Disease Control conducted a household probability survey in the four states along the US-Mexico border in which 1,255 Hispanic women ages 15 to 44 were interviewed regarding their smoking habits. In the same survey, 789 Anglo women ages 15 to 44 were interviewed and serve as a reference group. Using Texas vital statistics data, we calculated lung cancer mortality rates for Hispanic and Anglo women in Texas, for selected years 1970-1979. Smoking among Hispanics was most prevalent among older women, less educated women, and women previously married. However, for all demographic groups examined, Hispanic women had a lower prevalence of smoking when compared with Anglo women. Consistent with these findings on Hispanic and Anglo smoking habits, the age-specific lung cancer mortality rates for Hispanic women were lower when compared with Anglo women for each 10-year age group, ages 35 to 74. (no Refs)

14. FORMALDEHYDE IN PRESENT-DAY ENVIRONMENTAL TOXICOLOGY.

Beritic T, Kovac S, Dimov D
Odjel za profesionalne bolesti, Institut za medicinska istrazivanja i medicinu rada, Zagreb, Yugoslavia
Arh Hig Rada Toksikol; 32(4):363-395 1981

Role of formaldehyde (FA) in environment, toxicology, physical, chemical, and biological properties, FA in immediate human environment, and pathological and mutagenic effects of FA are discussed. Reactivity of FA and strong affinity for specific binding on protein amino-groups and nucleic acid are responsible for toxic and mutagenic effects of this chemical. Studies on the mutagenic and carcinogenic properties of FA are reviewed. (74 Refs) (In SCR)

15. TRICHLOROETHYLENE EXPOSURE - PENNSYLVANIA.

Pearson L, Lindemuth E, Witte EJ, Gregg MB
Southeast District State Dept. Health, Montgomery County, PA
MMWR; 30(19):226,231-233 1981

Effects of a trichloroethylene (TCE) spill in Montgomery County (Pennsylvania) were investigated with respect to well and ground water in the community surrounding the plant where the spill occurred, in air samples in the plant, in urinary excretion of TCE by workers exposed to TCE in the plant. The symptoms of TCE exposure in workers and controls were also examined. Levels of TCE were high in water. Time-weighted-av exposure to TCE vapors decreased below NIOSH recommended levels from February to May. Seven of the nine workers exposed to TCE reported symptoms characteristic of acute TCE exposure. TCE is structurally similar to vinyl chloride, but recent experimental data suggest that TCE may be a much weaker carcinogen than vinyl chloride. (5 Refs)

16. EPIDEMIOLOGICAL FINDINGS ON ESOPHAGEAL CANCER IN THE VENETO REGION.

Rossi M, Ancona E, Mastrangelo G, Solimbergo D, Paruzzolo P, Azzarini G, Sorrentio P, Peracchia A
Clinica Chirurgica III, Universita di Padova, Padova, Italy
Minerva Med; 73(22):1531-1540 1982

A study of 150 patients (125 men, 25 women, 40-71 yr old, av age 57.9 yr) with esophageal cancer and 150 control individuals (125 men, 25 women) is reported. Based on their daily and total consumption of tobacco, alcohol and corn flour the patients were categorized into relative risk groups. It was found that a daily alcohol consumption of 81 g/day or higher and a corn flour consumption in excess of 36 g/day significantly increased the relative risk factor (Rf). Tobacco use had no significant influence on the Rf. Combinations of more than one risk factor (alcohol, tobacco, corn flour) did not have a synergetic but a merely additive effect. Alcohol use was directly correlated to the incidence of esophageal cancer in 11.64% of cases, and corn flour use was correlated to cancer etiology in 3.96% of the patients. However no significant correlation could be established in 84.4% of the cases and causative factors remained unknown. It is suggested that other risk factors may have been related to general nutrition and vitamin and mineral intake. (44 Refs) (In ITA)

ENVIRONMENTAL AND OCCUPATIONAL FACTORS: RADIATION

17. ENVIRONMENTAL RADIATIONS AND CHILDHOOD DYNAMIC STATISTICS.

Sakka M
Tohoku Univ. Sch. Medicine, Sendai, Miyagi Prefecture, Japan
Nippon Igaku Hoshasen Gakkai Zasshi; 41(10):1004-1008 1981

In Fukushima prefecture the first nuclear power plant attained criticality in 1971. Since then six reactors have been in operation. Increasing concern is the possible adverse effects due to ionizing radiations released from nuclear reactors. As the radiation level around the nuclear power plants is usually low, induced effects are necessarily delayed ones which require tens of yr to appear. Among other tissues, embryos and fetuses are most radiosensitive and induced effects result in the change of childhood dynamic statistics. In this report dynamic statistics including stillbirth, perinatal death, neonatal death, infant death, 3rd yr examinations were surveyed in 18 health centers in the prefecture from 1961 to 1979. Environmental radiation levels in each district (health centers) were compared and were arranged in order. Dynamic statistics were also compared for each district and were arranged in order. Order correlation coefficients were calculated and a linearity between radiation level and health status was tested. No significant values were obtained ranging from 0.66 to-0.43 of correlation coefficients. Still birth decreased 4.4%/y since 1963 and neonatal death decreased 6.7%/y and infant death also decreased 8.7%/y since 1957 on an av. These decreases were negatively correlated with the proliferation of water supply service, sewage service and increase of physicians in 18 districts including 2 which are under continuous observation of environmental radiations released from nuclear power plants. Childhood dynamic statistics have been turning better in the last 10 yr in prefecture with the difference of 47 mR/y (lowest values of 56 mR/y on an av in 3 prefectures and highest of 103 mR/y in 4). Environmental radiation may initiate adverse effects on prenatal lives but the hy-

gienic improvement in recent yr must extinguish the promotion of the adverse effects. This may be a plausible explanation. (Author abstract) (9 Refs) (In JPN)

18. IDENTIFYING THE HEALTH RISKS FROM VERY LOW-DOSE SPARSELY IONIZING RADIATION.

Dreyer NA, Friedlander E

Epidemiology Resources, Inc., P.O. Box 57, Chestnut Hill, MA, 02167

Am J Public Health; 72(6):585-588 1982

The health risks from low-dose sparsely ionizing (low-LET) radiation have been the subject of continued debate. At present, quantitative estimates of risk are extremely uncertain due to the controversy surrounding both the dosimetry for A-bomb survivor data and the choice of mathematical models for extrapolating risk from high to low doses. Nevertheless, much can be learned about the nature of the health risks by reviewing the epidemiologic literature. We present a summary of diseases which have been associated with low-LET radiation (less than 1,000 rad) in at least two independent studies, according to the mean cumulative organ dose at which the disease was observed. At organ doses of less than or equal to 50 rad, the only diseases that have been reported consistently are thyroid cancer, salivary gland tumors, and leukemia. The first two diseases were observed in association with x-ray epilation of the scalp for tinea capitis, a therapy which is no longer employed. On the other hand, leukemia has been observed repeatedly to occur at cumulative doses of greater than or equal to 30 rad low-LET radiation. (Author abstract) (35 Refs)

19. HEALTH RISKS TO DISTANT POPULATIONS FROM URANIUM MILL TAILINGS RADON.

Swift JJ

Div. Criteria and Standards, Office Radiation Programs, Washington, DC

Health Risks to Distant Populations from Uranium Mill Tailings Radon. Available from National Technical Information Service, Springfield, VA, as PB82-137811:, 40 pp., 1981.

Uranium mill tailing piles can expose the population to radiation by several pathways. The author believes the air pathway to be the most important and radon-222 to be the principal nuclide. The report illustrates the effects of tailings piles on a variety of local and regional populations, assesses the effects of the tailings on distant populations, and compares EPA methods and results with assessments by others. (Author abstract)

20. PROBLEMS OF OCCUPATIONAL EXPOSURE TO X-RAYS.

Jankowski J

Instytut Medycyny Pracy w Lodzi, ul. Olowiana 6, 91 614 Lodz, Poland

Pol Przegl Radiol; 45(6):369-372 1981

The occupational exposure of more than 18,000 persons to x-rays during three consecutive yr was measured by individual dosimetry. The total yearly dose did not exceed 1.29 x 10(-4) Ci/kg (500 milliR) in approx 99% of all persons, and it exceeded 64.5 x 10(-4) Ci/kg in one person only. (10 Refs) (In POL)

21. EXTERNAL RADIATION EXPOSURE OF PERSONNEL WORKING WITH 99MTECHNETIUM.

Schurnbrand P, Schicha H, Thal H, Emrich D

(c/o Emrich) Nuklearned Abteilung, Med. Einrichtungen der Universitat Gottingen, Robert-Koch-Strasse 40, D-3400 Gottingen, W. Germany

Eur J Nucl Med; 7(5):237-239 1982

The possibility of 99mTechnetium exposure for personnel working in diagnostic nuclear medicine is 5-9x higher than the max permissible dose (60 rem/yr). A reduced risk can be achieved by (1) observing the shortest possible working time close to the radioactive patient, (2) strict avoidance of direct contact with vials and syringes containing 99mTechnetium by using long-distance working tools during preparation of radiopharmaceuticals, and syringe shielding during application, and (3) exclusive use of tungsten shielding of syringes during injection. (5 Refs)

22. PHYSICAL CARCINOGENESIS: RADIATION - HISTORY AND SOURCES.

Upton AC

Health Sciences Center, State Univ. New York, Stony Brook, NY

Cancer - A Comprehensive Treatise Vol. 1. Etiology - Chemical and Physical Carcinogenesis. Second Edition. Becker FF, ed. New York, Plenum Press, 714 pp., 1982.

Carcinogenic activity has been documented for radiations of the electromagnetic spectrum and for corpuscular, or particulate, radiations. Of the electromagnetic radiations, only UV radiations and the ionizing radiations are known to possess carcinogenic properties, whereas corpuscular radiations which are also ionizing, have been found to be carcinogenic in every case investigated. The carcinogenic effects of UV radiation and of the ionizing radiations are attributed to their production of physicochemical changes in critical macromolecular constituents. Cancers were first noted among early radiologists and radiation workers. Dial painters, miners of radioactive are, Japanese atomic bomb survivors, and natives of the Marshall Islands (who were accidentally exposed to nuclear fallout from a weapon test) are among earlier groups which developed specific types of cancer attributed to radiation exposure. Safety standards established by the Federal Radiation Council stipulated that occupational exposure of the whole body and the most radiosensitive organs of the body should not deliver a cumulative dose (in rems) exceeding 5x the age of the worker (in yr) beyond age 18. (65 Refs)

23. RADIATION CARCINOGENESIS.

Storer JB

Biology Div., Oak Ridge Natl. Lab., Oak Ridge, TN

Cancer - A Comprehensive Treatise Vol. 1. Etiology - Chemical and Physical Carcinogenesis. Second Edition. Becker FF, ed. New York, Plenum Press, 714 pp., 1982.

Ionizing radiation in sufficiently high dosage acts as a complete carcinogen in that it serves as both initiator and promoter. Cancers can be induced in nearly any tissue or organ of man or experimental animals by the proper choice of radiation dose and exposure schedule. Myeloid leukemia and the acute leukemias are probably the most easily induced of all radiation-induced neoplasms. Unlike solid tumors of other tissues with a long latent period, the leukemias occur early, show a high incidence, and then fall close to the control incidence. The other relatively easily induced tumor in human populations is cancer of the thyroid, particularly when the radiation is delivered to juveniles. Breast cancer can also be induced by radiation exposure but higher doses are required for its induction. Evidence

that the lung is moderately sensitive to cancer induction is provided principally from studies of uranium miners occupationally exposed to radon. The salivary gland is moderately sensitive to cancer induction, and a few have been reported as being radiation-induced. Cancer of the skin was a frequent sequela to exposure to very large doses of radiation received by earlier x-ray workers who were unaware of the hazards of radiation exposure. Like skin, bone is resistant to cancer induction, even though a large number of radiation-induced sarcomas have been reported. Physical factors that effect carcinogenesis include dose rate, radiation quality, internal emitters vs external exposure, total body and partial body exposure, and host factors. (103 Refs)

24. A RE-EXAMINATION OF THE ROLE OF SOLAR RADIATION IN THE ETIOLOGY OF CUTANEOUS MALIGNANT MELANOMA (MEETING ABSTRACT)

Schwartzbaum J

Division of Epidemiology, School of Public Health, University of California Los Angeles, Los Angeles, CA

109th Annual Meeting of the American Public Health Association, November 1-5, 1981, Los Angeles, California. American Public Health Association 390 pp., 1981.

Age-adjusted incidence and mortality rates of cutaneous malignant melanoma are rising at the rate of 3% per year. Epidemiologists have attributed this secular trend to alterations in the percentage of the body covered by clothing and the subsequent increased exposure to ultraviolet radiation. Using incidence data from the Connecticut Tumor Registry (1935-1978) and the methods of content analysis to create indices of changes in the percentage of the body covered by clothing, I constructed a mathematical model which takes age, period, and cohort effects into account to investigate the association between changes in incidence rates and changes in fashion. Preliminary results indicate a statistically significant association. I evaluate these results in the context of the issues related to the use and interpretation of aggregate data. (no Refs)

25. RADIATION EPIDEMIOLOGY (MEETING ABSTRACT)

Marks S

No affiliation given

148th National Meeting of the American Association for the Advancement of Science, January 3-8, 1982, Washington, D.C. American Association for the Advancement of Science 182 pp., 1982.

The field of radiation epidemiology has concerned itself with the collection and analysis of data on human populations exposed to radiation as a result of (1) medical radiation therapy for specific diseases, (2) occupation, and (3) atomic bombings of the Hiroshima and Nagasaki populations. Having demonstrated the causal relationship of radiation to human cancer, the activities of greatest interest in carrying out current studies are the identification of specific cancer types attributable to radiation in these populations and the development of dose-response relationships. The latter may differ for various types of radiation and exposure patterns. Biostatisticians must carry out procedures to characterize statistically significant relationships between radiation exposure and cancer types, establish appropriate dose-response relationships and estimate parameter values. The epidemiologist collects and elevates the data on exposure and health effects. Important studies in the three major exposure categories will be reviewed briefly in this paper, and generic and special problems in the relevant sets of exposure and health data discussed. (no Refs)

26. STATISTICAL APPROACH TO THE ANALYSIS OF OCCUPATIONAL RADIATION EXPOSURE (MEETING ABSTRACT)

Breslow N

University of Washington, Seattle, WA

148th National Meeting of the American Association for the Advancement of Science, January 3-8, 1982, Washington, D.C. American Association for the Advancement of Science 182 pp., 1982.

In analyzing long term follow-up studies of occupational cohorts, the statistician attempts to relate complicated work histories to the subsequent development of cancer and other diseases, while accounting for the possibly confounding effects of age, calendar period and (when appropriate data are available) personal characteristics. An advantage of studies of radiation workers is that relatively precise quantitative information on exposure levels is often recorded annually. This paper illustrates and compares four methods of analysis of such data, all of which are based on the proportional hazards (PH) survival time model with time-dependent covariates: (1) PH model in conjunction with external standard rates; (2) Partial likelihood analysis of the PH model with unknown standard rates; (3) Case-control analysis with controls sampled at random from the risk sets; (4) Case-control analysis using deaths from 'unrelated' causes as controls. A connection is made between methods (1) and (4) and the well known techniques of standardized mortality ratios (SMR) and proportional mortality ratios (PMR). (no Refs)

27. CANCER AND ALTERNATING MAGNETIC FIELD EXPOSURE (MEETING ABSTRACT)

Wertheimer N

Department of Preventive Medicine, University of Colorado Medical School, Denver, CO

148th National Meeting of the American Association for the Advancement of Science, January 3-8, 1982, Washington, D.C. American Association for the Advancement of Science 182 pp., 1982.

Cancer was associated with high-current wiring configurations (HCCs) near the home for both children and adults. Such wiring can produce alternating magnetic field (AMF) exposure at a level which, though very low, may produce physiological effects. Several patterns in the data suggest that the observed association is causal rather than artifactual: (1) A dose-relationship was found. (2) The association did not appear to be an artifact of age, urbanicity, neighborhood, or socioeconomic level. (3) The association was most clearly demonstrable where urban/industrial carcinogens were least apt to obscure the effect. (4) Indices of AMF exposure based on occupational, geographic, and urbanicity variables, as well as on HCCs, consistently showed certain types of cancer (notably cancer of the nervous system) to be most strongly associated with AMF exposure. (5) A distinct pattern of latency between first exposure to the HCC and cancer diagnosis was seen. This pattern suggests that AMFs act as promoters rather than initiators of cancer. Such a cancer-promoting effect is further suggested by preliminary work which indicates that residence at a HCC home may be associated with a relatively poor final prognosis for five-year survivors of life-threatening forms of cancer. (no Refs)

28. RADIOACTIVE MATERIALS RELEASED FROM NUCLEAR POWER PLANTS.

Tichler J, Benkovitz C
Brookhaven Natl. Lab., Upton, NY
Radioactive Materials Released from Nuclear Power Plants. Available from National Technical Information Service, Springfield, VA, as NUREG/CR-2227:, 193 pp., 1981.

Releases of radioactive materials in airborne and liquid effluents from commercial light water reactors during 1979 have been compiled and reported. Data on solid waste shipments as well as selected operating information have been included. This report supplements earlier annual reports issued by the former Atomic Energy Commission and the Nuclear Regulatory Commission. The 1979 release data are compared with previous years' releases in tabular form. Data covering specific radionuclides are summarized. (Author abstract)

29. OCCUPATIONAL DISEASES DIAGNOSED DURING PREVENTIVE FOLLOW-UP EXAMINATIONS OF FORMER URANIUM MINERS.

Pacina V, Vich Z, Elterlein E
Zavodni ustav narodniho zdravi uranoveho, prumyslu Z. Bejedleho 501, 261 02 Pribram VII, Czechoslovakia
Prac Lek; 34(4):137-139 1982

A group of 1,139 former uranium miners were subjected to preventive follow-up after termination of employment. Lung cancer was detected in 21/1139 cases, and lung cancer was suspected in 11 others. Lung cancer was diagnosed within a 4-yr follow-up period in 18/21 patients. Other malignant process was suspected in two cases. (7 Refs) (In CZE)

30. ENVIRONMENTAL RADIOACTIVITY IN THE FAROES IN 1980.

Aarkrog A, Lippert J, Dahlgaard H
Riso Natl. Lab., DK-4000 Roskilde, Denmark
RISO Rep; 448:39pp. 1981

Measurements of fallout radioactivity in the Faroes in 1980 are presented. Strontium-90 (and 137Cs in most cases) was determined regularly in samples of precipitation, grass, milk, fish, sea water, bread, and drinking water, and in spot check samples of lamb, sea birds, potatoes, sea plants, vegetables, eggs, and human bone. The 90Sr fallout rate in the Faroes in 1980 was approx 0.33 mCi km-2. Based on a diet estimate, the mean content of 137Cs in the Faroes adult was estimated at approx 110 picoCi (g K)(-1). (6 Refs)

31. RADIATION EXPOSURE TO NURSING PERSONNEL FROM PATIENTS RECEIVING DIAGNOSTIC RADIONUCLIDES.

Burks J, Griffith P, McCormick K, Miller R
(c/o McCormick) Nursing Dept., NIH, Clinical Center, Building 10, Room 8N202, 9000 Rockville Pike, Bethesda, MD, 20205
Heart Lung; 11(3):217-220 1982

Thirteen nurses measured their exposure from 73 patients undergoing a total of 194 diagnostic radionuclide studies during a 13-wk period. Eight types of radionuclides were administered in doses ranging from 0.4-27.3 mCi. Pocket dosimeters demonstrated that the 5-day work week dose ranged from 0.0 to 10.4 milliroentgen-equivalent-man (mrem). The av cumulative quarterly exposure was 11.2 +-9.8 mrem, well below the max permissible dose for the fetus of a pregnant occupational worker. None of the film badges worn by the nurses for detection of whole-body radionuclide exposure recorded detectable radiation exposure. (13 Refs)

32. CURRENT CONCEPTS IN ULTRAVIOLET CARCINOGENESIS.

Granstein RD, Sober AJ
(c/o Sober) Dept. Dermatology, Massachusetts General Hosp., Boston, MA, 02114
Proc Soc Exp Biol Med; 170(2):115-125 1982

The pathobiology and epidemiology of UV-induced carcinogenesis are reviewed. The two most common types of nonmelanoma skin cancers in humans and those most related to sun exposure are basal cell carcinoma and squamous cell carcinoma. Nonmelanoma skin cancer in the United States occurs with an incidence of about 400,000 new cases per yr. Phenotypic characteristics associated with the development of this type of cancer include light eye color, fair complexion, and poor tanning ability. While highly pigmented races appear refractory to UV-induced skin carcinogenesis, albinos of such races experience a high incidence of such tumors on sun-exposed areas of the body. Physiologic aging may play a role in the development of nonmelanoma skin cancer. Exposure of human skin to UV radiation results in immediate changes in the nuclear DNA that can be demonstrated with antibodies specific for DNA altered by UV radiation. Modulation of UV-induced skin carcinogenesis by antioxidants, physical factors, carcinogens, retinoids, Beta-carotene, and the immune system are discussed. Malignant melanoma is a neoplasm derived from melanocytes. Both the incidence and death rate from malignant melanoma appear to have been increasing in the past few decades. Although solar exposure appears to be associated with the incidence of melanoma, the relationship is not as clear as for nonmelanoma skin cancer. (128 Refs)

33. EPIDEMIOLOGICAL STUDIES ON RADIATION CARCINOGENESIS IN HUMAN POPULATIONS FOLLOWING ACUTE EXPOSURE: NUCLEAR EXPLOSIONS AND MEDICAL RADIATION.

Fabrikant JI
Donner Lab., Univ. California, Berkeley, CA, 94720
Yale J Biol Med; 54(6):457-469 1981

The present review provides an understanding of our current knowledge of the carcinogenic effect of low-dose radiation in man, and surveys the epidemiological studies of human populations exposed to nuclear explosions and medical radiation. Discussion centers on the contributions of quantitative epidemiology to present knowledge, the reliability of the dose-incidence data, and those relevant epidemiological studies that provide the most useful information for risk estimation of cancer induction in man. Reference is made to dose-incidence relationships from laboratory animal experiments where they may obtain, for problems and difficulties in extrapolation from data obtained at high doses to low doses, and from animal data to the human situation. The paper describes the methods of application of such epidemiological data for estimation of excess risk of radiation-induced cancer in exposed human populations and discusses the strengths and limitations of epidemiology in guiding radiation protection philosophy and public health policy. (Author abstract) (39 Refs)

34. OCCUPATIONAL SAFETY DATA AND CASUALTY RATES FOR THE URANIUM FUEL CYCLE.

O'Donnell FR, Hoy HC
Oak Ridge Natl. Lab., Oak Ridge, TN
Occupational Safety Data and Casualty Rates for the Uranium Fuel Cycle. Available from National Technical Information Service, Springfield, VA, as DE82001948:, 88 pp., 1981.

Occupational casualty (injuries, illnesses, fatalities, and lost workdays) and production data are presented and used to calculate occupational casualty incidence rates for technologies that make up the uranium fuel cycle, including: mining, milling, conversion, and enrichment of uranium; fabrication of reactor fuel; transportation of uranium and fuel elements; generation of electric power; and transmission of electric power. Each technology is treated in a separate chapter. All data sources are referenced. All steps used to calculate normalized occupational casualty incidence rates from the data are presented. Rates given include fatalities, serious cases, and lost workdays per 100 man-years worked, per 10(12) Btu of energy output, and per other appropriate units of output. (Author abstract)

35. EPIDEMIOLOGICAL STUDIES ON RADIATION CARCINOGENESIS IN HUMAN POPULATIONS FOLLOWING ACUTE EXPOSURE: NUCLEAR EXPLOSIONS AND MEDICAL RADIATION.

Fabrikant JI
Donner Lab., California Univ., Berkeley, CA
Proceedings of the Symposium on Effects on Humans of Exposure to Low Levels of Ionizing Radiation, held in New Haven, Connecticut, May 11, 1981: Available from National Technical Information Service, Springfield, VA, as DE82002950:, 26 pp., 1981.

The current knowledge of the carcinogenic effect of radiation in man is considered. The discussion is restricted to dose-incidence data in humans, particularly to certain of those epidemiological studies of human populations that are used most frequently for risk estimation for low-dose radiation carcinogenesis in man. Emphasis is placed solely on those surveys concerned with nuclear explosions and medical exposures. (Author abstract)

36. TRANSURANIUM AND OTHER LONG-LIVED RADIONUCLIDES IN THE TERRESTRIAL ENVIRONS OF NUCLEAR POWER PLANTS. FINAL REPORT.

Robertson DE, Thomas CW, Perkins RW, Thomas VW
Battelle Pacific Northwest Lab., Richland, WA
Transuranium and Other Long-lived Radionuclides in the Terrestrial Environs of Nuclear Power Plants. Final Report. Available from National Technical Information Service, Springfield, VA, as DE82003074:, 181 pp., 1981.

The purpose of this research was to ascertain the contribution of certain radioactive elements, especially transuranics, to the environment from nuclear power plants as opposed to that from fallout due to weapon testing. Of the radioactive nuclides, alpha emitter, eg, plutonium, are considered the most hazardous to human health; hence, the extent to which power plants may release plutonium to the environment is a matter of concern. Samples of soil, plants, and air were taken at four nuclear power plants: Rancho Seco (California), Zion (Illinois), Browns Ferry (Alabama), and Quad-Cities (Illinois). For background purposes, samples were also collected at 10 sites in Idaho, Indiana, Mississippi, Missouri, Montana, North Dakota, Oklahoma, Texas, Washington, and West Virginia that were remote from nuclear plants. Samples were analyzed for plutonium, americium, and curium as well as for a number of other species. Emphasis was on plutonium because the ratio of 238Pu to 239Pu 240Pu can be used to distinguish reactor plutonium from fallout plutonium. The power plant contribution to the environment of the elements tested is negligible. With plutonium, for example, the absolute concentration of the element differed greatly from plant to plant and even from site to site at a given plant; however, the 238Pu, 239Pu ratio was remarkably constant and, with rare exceptions, could not be distinguished from the ratios of background samples. At a few localities, for some elements, a power plant contribution could be recognized. In such cases, despite a power plant contribution, the absolute concentration of the element was below a national background value. (Author abstract)

37. RADIOLOGICAL EXPOSURE FROM SHORE SEDIMENTS CONTAINING THORIUM 229.

Edvardsson KA, Evans S
Svensk Kaernbraenslefoersoerjning A.B., Stockholm, Sweden
Radiological Exposure from Shore Sediments Containing Thorium 229. Available from National Technical Information Service, Springfield, VA, as DE81700261:, 38 pp., 1981.

Exposure from thorium-229 entering the aquatic recipient from a hypothetical fuel repository for high-level radioactive waste and contaminating the shore has been investigated. The aim of the present study is to carry out realistic calculations of the external and internal exposure of thorium-229, considering both daughter products and beta-radiation. The external dose has been assessed under the assumptions that: -thorium-229 in the shore sediment is in steady state with its daughter products - the activity is homogeneously distributed in the shore sediment - radiation absorption occurs in air. The calculations have been performed for the heights 1.0 and 0.1 m above the ground. To determine the horizontal and vertical distribution naturally occurring thorium in shore sediments, field measurements were performed. A homogeneous distribution of thorium can be considered relevant for the further dose calculations. The external alpha-dose rate from 1 mu Ci of thorium deposited on the shore was calculated to 5 x 10(-6) rem h-1. The contribution from beta-radiation will give a dose commitment of the same order of magnitude. As skin dose the beta-dose rate is equivalent to 1 x 10(-4) rem h-1. The dose commitment to the skeleton for an intake of 1 mu Ci of thorium-229 is 90 rem. (Author abstract) (In SWE)

38. EVALUATION OF THE RADIATION ENVIRONMENT IN THE FOSDALEN MINES.

Stranden E, Beteig L
Statens Inst. for Straalehygiene, Oslo, Norway
Evaluation of the Radiation Environment in the Fosdalen Mines. Available from National Technical Information Service, Springfield, VA, as DE81700276:, 6 pp., 1981.

Measurements were made in 1979, 1980 and 1981 in the Fosdalen mines of the concentrations of radon (Rn-222) and thoron (Rn-220) daughters in the atmosphere. These values are given as fractions of the working level (WL). Based on the hours worked by randomly selected miners, the effective dose equivalent has been calculated. In one part of the mines this is up to 60% of the annual dose limit for occupational exposure, in the other parts the doses are probably less than 30% of the annual dose limit. Large short term and seasonal variations occur due to variations in atmospheric pressure and temperature. (Author abstract) (In NOR)

39. NIAGARA FALLS STORAGE SITE, ENVIRONMENTAL MONITORING REPORT FOR 1979 AND 1980.

Weidner RB, Boback MW
Natl. Lead Co. of Ohio, Cincinnati, OH
Niagara Falls Storage Site, Environmental Monitoring Report for 1979 and 1980. Available from National Technical Information Service, Springfield, VA, as DE82003005:, 31 pp., 1981.

The Niagara Falls Storage Site is a 190-acre facility located in Niagara County, New York. It is owned by the US Department of Energy (DOE) and is used for the storage of radioactive residues. This site is managed by NLO, Inc, contract operator of the DOE Feed Materials Production Center near Cincinnati, Ohio. During 1979 and 1980, water and air samples were collected at and near the storage site to provide information about radionuclides in the off-site environment. Results show that uranium and radium concentrations in ground and surface water were within DOE Guide values for uncontrolled areas. Radon-222 in air at the site west boundary exceeded the DOE Guide but off-site monitoring in the general area showed radon-222 concentrations well within the Guide. (Author abstract)

40. OCCUPATIONAL EXPOSURES TO URANIUM: PROCESSES, HAZARDS, AND REGULATIONS.

Stoetzel GA, Fisher DR, McCormack WD, Hoenes GR, Marks S
Battelle Pacific Northwest Lab., Richland, WA
Occupational Exposures to Uranium: Processes, Hazards, and Regulations. Available from National Technical Information Service, Springfield, VA, as PNL-3341-USUR-01:, 91 pp., 1981.

The United States Uranium Registry (USUR) was formed in 1978 to investigate potential hazards from occupational exposure to uranium and to assess the need for special health-related studies of uranium workers. This report provides a summary of Registry work done to date. The history of the uranium industry is outlined first, and the current commercial uranium industry (mining, milling, conversion, enrichment, and fuel fabrication) is described. This description includes information on basic processes and areas of greatest potential radiological exposure. In addition, inactive commercial facilities and other uranium operations are discussed. Regulation of the commercial production industry for uranium fuel is reported, including the historic development of regulations and the current regulatory agencies and procedures for each phase of the industry. A review of radiological health practices in the industry - facility monitoring, exposure control, exposure evaluation, and record-keeping - is presented. A discussion of the nonradiological hazards of the industry is provided, and the final section describes the tissue program developed as part of the Registry. (Author abstract)

OCCUPATIONAL FACTORS: SPECIFIC AGENTS OR INDUSTRIES

41. LEUKEMIA AND FARM PRACTICES IN IOWA.

Burmeister LF, Van Lier SF, Isacson P
Dept. Preventive Medicine and Environmental Health, Univ. Iowa, Iowa City, IA, 55242
Am J Epidemiol; 115(5):720-728 1982

Death certificate analyses of 1,675 white, male Iowans over age 30 yr who died of leukemia in 1964-1978 were completed. Each case was matched to two controls on age (within 2 years) at death, county of usual residence and year of death. Consideration of usual occupation, as recorded on the death certificate, resulted in an odds ratio for leukemia mortality among farmers of 1.24 (p less than 0.05). The highest odds ratios for farmers were observed in those born after 1890, those dying after 1970, and those dying at age 65 yr or younger. Odds ratios for farmers were also elevated in counties with high soybean and corn production per acre for those born between 1890 and 1900. For those born after 1900, odds ratios for farmers were increased in counties with the greatest numbers of egg-laying chickens and the largest number of acres treated with herbicides. The types of leukemia causing elevated mortalities in Iowa farmers were chronic lymphatic and unspecified lymphatic. Mortality from unspecified lymphatic leukemia was associated with corn per acre, number of milk cows and number of egg-laying chickens. (Author abstract) (28 Refs)

42. CARCINOMA OF THE RESPIRATORY TRACT AFTER OCCUPATIONAL EXPOSURE TO TAR: A CRITICAL OMISSION FROM THE LIST OF OCCUPATIONAL DISEASES.

Manz A
Monckebergstrasse 8, im Hause der HWW, D-2000 Hamburg 1, W. Germany
Zentralbl Arbeitsmed Arbeitsschutz Prophyl Ergon; 32(4):118-127 1982

Current lists of occupational diseases maintained by the Federal Republic of Germany and other European countries attribute only the skin disorders to the occupational exposure to coal tar. Exposure is considered to be limited to workers in coke plants. However, other workers, such as road repair crews who use tar, are also exposed. Recognition of occupational hazards affects the practice of occupational medicine, effort at prevention, and measures to humanize the workplace. Legal requirements for reporting of job-related diseases include mucosal changes or carcinogenesis in the urinary bladder as a criterion. Since anthracite coal tar and pitch contain compounds such as beta-naphthylamine, workers exposed to these substances should be covered by appropriate regulations. However, the presence of known carcinogens in coal tar and pitch is apparently not widely known. Studies in several countries have shown an increased incidence of cancers of the respiratory tract and urinary bladder among gas-works employees when compared to nonexposed workers such as office workers and water works employees. Smoking apparently affects the incidence of cancers among nonexposed workers but not among exposed workers. Current evidence therefore indicates that respiratory and bladder cancers should be included on the lists of occupationally related diseases. (61 Refs) (In GER)

43. CANCER ASSOCIATED WITH ASBESTOSIS, SCHISTOSOMIASIS, FOREIGN BODIES, AND SCARS.

Brand KG
Dept. Microbiology, Univ. Minnesota Medical Sch., Minneapolis, MN
Cancer - A Comprehensive Treatise Vol. 1. Etiology - Chemical and Physical Carcinogenesis. Second Edition. Becker FF, ed. New York, Plenum Press, 714 pp., 1982.

An etiologic connection between asbestosis and cancer can no longer be disputed. One out of five asbestos workers dies from cancer of the lung. In another 10% the pleura, peritoneum, larynx, pharynx, or the alimentary tract is afflicted. The time of latency from first exposure until detection of the cancer is between 20 and 40 yr. A causal relationship between Schistosoma haematobium infection and cancer of the urinary bladder is indicated by several pieces of evidence. The incidence of bladder cancer in schistosomiasis patients peaks between the

ages of 30 and 50 yr, whereas bladder cancer without underlying schistosomiasis is rarely encountered before the age of 50. Both asbestos and schistosomiasis cancers have pointed to tissue as a circumstance conspicuously linked to preneoplastic development. This association is further strengthened by numerous reports of scar-related cancer. After latencies of several decades, sarcomas were seen to arise from scars caused by bullet wounds, surgical operations, or amputations. Carcinomas, frequently of the epidermoid type, developed from deep burn scars and chronic fistulas of the bone. Nondegradable foreign bodies acquired by accident or implanted for medical reasons cause chronic tissue reactions that are characterized by scar-like fibrotic encapsulation of the foreign bodies. Such conditions can lead to neoplasms in humans and animals. (102 Refs)

44. CANCER MORTALITY IN A PIGMENT PLANT IN NEWARK, NEW JERSEY (MEETING ABSTRACT)

Louria DB, Thind I, Sheffet A
Department of Preventive Medicine, New Jersey Medical School, Newark, NJ
109th Annual Meeting of the American Public Health Association, November 1-5, 1981, Los Angelec, California. American Public Health Association 390 pp., 1981.

A cohort (1,946) of men employed between January 1, 1940 and December 31, 1979 in a pigment factory using both zinc and lead chromates was analyzed for cancer mortality because of reports of increased lung cancer incidence among chromate-exposed persons. Expected number of cases were determined using cause-age-time-sex-race specific mortality rates obtained from United States Vital Statistical Data. Employees working for less than 1 month were excluded. Thirty-six lung cancer deaths were observed; 23 were expected. There were seven deaths from pancreatic cancer (four expected), and nine from stomach cancer (five expected). When workers were grouped according to intensity of chemical exposure, increased mortality was found for those employed over 10 years or employed for over two years with intensive chemical exposure. Chromate exposure appears to promote lung cancer. Those exposed to lead and zinc chromates should also be carefully evaluated for possible increase in incidence of pancreas and stomach cancers. (no Refs)

45. LIFETIME OCCUPATIONAL AND BLADDER CANCER (MEETING ABSTRACT)

Najem GR, Louria DB, Thind IS, Seebode JJ
New Jersey Medical School, Newark, NJ
109th Annual Meeting of the American Public Health Association, November 1-5, 1981, Los Angeles, California. American Public Health Association 390 pp., 1981.

The present case-control study of bladder cancer in two northern counties of New Jersey was conducted to investigate a tumor that has been considered to have a strong association with industrial and environmental exposures. The study population included 75 bladder cancer cases and 150 matched controls. Cases and controls were matched for race, sex, age, place of birth, and place of residence. Risk ratios of greater than 2.0 were found for cigarette smoking among male and female cases and for working in dye, petroleum (fuel), or plastic industries among male cases. No significant association was found for: cigar and pipe smoking; caffeine, saccharine, and alcohol consumption; use of hair dyes, and lifetime occupational history of working in other than dye, petroleum, and plastic industries. No differences were found in family history of cancer. Simultaneous multiple primary cancer sites were found in 9.3% of the bladder cancer patients; this is higher than the 0.2 to 8% reported in the medical literature. (no Refs)

46. MUCIN-PRODUCING ADENOCARCINOMAS OF THE SINONASAL TRACT IN WOOD-WORKERS (MEETING ABSTRACT)

Lingeman CH, Heffner DK, Hyams VJ
National Cancer Institute, Bethesda, MD
Lab Invest; 46(1):50A 1982

Men exposed to wood dust are at high risk of developing adenocarcinomas of the nasal cavities and paranasal sinuses. The association has been mainly with fine dust generated from hard woods such as oak or beech. The responsible carcinogen (or carcinogens) has not been identified. Information about occupation and other environmental exposures was obtained from 72 patients with glandular neoplasms of the sinonasal tract whose biopsies were sent to the Armed Forces Institute of Pathology for consultation. Ages ranged from 7 to 90 years (median 58). Forty-five patients were males including four under age 21. Ten of the adult males reported having worked in occupations in which there was opportunity for inhalation of wood dust. An eleventh man reported working with wood in a home workshop. The neoplasms of all but one of these men were mucin-producing adenocarcinomas. The neoplasms of the men and women without known exposure to wood dust were a variety of histopathologic types of glandular neoplasms and no single pattern predominated. Except for wood dust, no correlations were made between the histopathologic types of neoplasms and specific occupations, although several patients reported exposure to dusts other than wood including asbestos, coal, cotton, and possibly flour. (no Refs)

47. LUNG CANCER IN FOUNDRIES (MEETING ABSTRACT)

Gibson ES
Occupational and Environmental Health, DOFASCO, Inc., Hamilton, Ontario, Canada
J Occup Med; 24(4):331 1982

Certain foundry trades, have been associated with an excess risk for lung cancer for many years. Only in the past few years have epidemiological studies been used to attempt to clarify the situation. Four studies tend to support this finding; one study, part of a much larger study, does not. Casual agents have not been identified, but polycyclic aromatic hydrocarbons emitted in moulding are generally blamed. The epidemiological evidence for the association of lung cancer with foundry work will be reviewed. Results of work done at DOFASCO using the Ames test to identify mutagenic activity in the foundry atmosphere will be described. Levels of mutagenic activity correlate with the differences in risk between the foundry trade groups will be studied. Ongoing work in testing for chromosomal abberations, urine mutagenicity, chemical identification of carcinogens, and the examination of the role of particulate matter as a carrier of carcinogenic material will be described. (no Refs)

48. REVIEW OF NICKEL TOXICOLOGY (MEETING ABSTRACT)

Cecutti AG
Canadian Nickel Division, Sudbury Operations, Falconbridge, Ontario, Canada
J Occup Med; 24(4):331 1982

Nickel carbonyl poisoning and nickel dermatitis have long been known. The main emphasis of this paper will be on the recent interest in nickel carcinogenesis. NIOSH has estimated that 250,000 workers in the United States are exposed to inorganic nickel. Numerous animal studies have clearly identified

the carcinogenic activity of nickel. More recently, epidemiological and in vitro studies indicate that the so-called insoluble nickel compounds are much more active biologically. Nickel analysis in biological tissue has been refined so that small differences in the environment are demonstrated in blood and urine. Aside from nickel carbonyl poisoning, there is no dose response relationship between biological levels of nickel and specific clinical manifestations of disease. Confounding the tissue is the relationship between total body burden of nickel and serum levels, and further, no firm correlation exists at the moment between environmental monitoring and biological monitoring of insoluble nickel compounds. (no Refs)

49. MORTALITY IN ONTARIO NICKEL WORKERS (MEETING ABSTRACT)

Roberts RS
Department of Epidemiology and Biostatistics, McMaster University, Hamilton, Ontario, Canada
J Occup Med; 24(4):332 1982

This presentation will describe the design and major findings of a large mortality study of Ontario nickel workers. The research design is a conventional historical prospective approach with mortality over a 27 year period ascertained through linkage with the Canadian National Mortality Data Base of death certificates. An analysis of cause-specific standardized mortality ratios will be presented by major occupational subgroups within the work force (miners, millers, furnance workers, etc) and concentrate on various respiratory cancers and kidney cancer. Finally, the presentation will investigate the occurrence of unusual patterns of cancer mortality in other sites in what might be described as a 'controlled scientific fishing expedition.' (no Refs)

50. THE COSTS AND EFFECTS OF SCREENING FOR CANCER AMONG ASBESTOS-EXPOSED WORKERS.

McNeil BJ, Eddy DM
Dept. Radiology, Harvard Medical Sch., 25 Shattuck St., Boston, MA
J Chronic Dis; 35(5):351-358 1982

Several million workers previously exposed to asbestos are at risk each year for developing asbestosis or cancer as a result of this exposure. We have reviewed the data on the general effectiveness of screening for the two most common cancers found in these workers (lung cancer and colo-rectal cancer) and have compared the relative benefits expected from screening workers for colon or lung cancer 10, 15, 20 or 25 yr after their initial exposure. Although lung cancer is common, there is little evidence at present that screening for this disease is effective in reducing mortality. Colon cancer is less common, there is more evidence that screening is effective, and the relatively high risk of dying from this disease in asbestos workers makes screening useful. The cost per additional year of life extended by screening is only a few hundreds of dollars, making colon cancer screening programs for asbestos workers considerably more cost-effective than most other screening programs. We conclude that occupational safety agencies should consider implementing screening programs for colon cancer in workers exposed to asbestos over 10 yr ago. (Author abstract) (34 Refs)

51. A MUTAGENICITY ASSAY OF URINE OF WORKERS IN A REFINERY.

Inamasu T, Kitamori S, Ishizawa M, Hisanaga A, Ishinichi N
Dept. Hygiene, Faculty Medicine, Kyushu Univ., Fukuoka 812, Japan
Sangyo Igaku; 23(6):640-641 1981

Mutagenicity of urine from 24 refinery workers (22-50-yr-old men) either exposed (19) or unexposed (5 office workers) to pitch and tars was examined by means of preliminary experiments (Yamasaki et al) and the Ames test. Urine samples were taken before and after work. The factory workers wore special masks during work and the environment had a strong ventilation system. Differences were observed between the mutagenicity (quantified as revertants (rev)/100 ml urine) of the urine collected before work and that after work; the differences varied according to the individual tested, and no consistent trend was observed. When analyzed according to groups, the mean levels of mutagenicity of the urine collected after work were 2.5x higher in the exposed group (320 rev/100 ml) than in the unexposed group (127 rev/100 ml). Mean levels of mutagenicity of the urine collected before work were 1.8x higher in the exposed group. Comparison of the mean levels of mutagenicity of urine obtained before and after work showed a 50 rev/100 ml increase in the exposed group and a 23 rev/100 ml decrease in the unexposed group. Comparison of smokers and non-smokers in the exposed group showed 50 rev/100 ml higher mean mutagenicity levels of the urine both before and after work in the non-smokers than in the smokers. Mutagenicity of urine was thought to be an effective index of exposure to pitch and tars. (4 Refs) (In JPN)

52. FEASIBILITY OF AN EPIDEMIOLOGICAL STUDY ON THE OCCURRENCE OF MALIGNANT BRAIN TUMOURS IN PETROCHEMICAL WORKERS.

Boot CP
Medical Biological Lab., RVO-TNO, Rijswijk, The Netherlands
Feasibility of an Epidemiological Study on the Occurrence of Malignant Brain Tumours in Petrochemical Workers. Available from National Technical Information Service, Springfield, VA, as PB82-128752:, 30 pp., 1981.

Recently Alexander et al (1980) found indications of an increased risk of malignant brain tumors in petrochemical workers. In this report usefulness and feasibility of an epidemiological study in this field in the Netherlands are discussed. The following conclusions were drawn: (1) Considering the methodological shortcomings and the contradictory results of other epidemiological studies, the suspicion of an elevated risk seems to have a weak basis. (2) The extent of the potential problem appears to be numerically limited. Assuming a twofold increased risk (based on data from Alexander's study) it can be estimated that in The Netherlands not more than 1% of total mortality due to malignant brain tumors would be attributable to work in petrochemical industries. (3) It is difficult to carry out a reliable and interpretable epidemiological study. A retrospective cohort study will give problems in completing the population at risk, ascertaining the correct causes of death and composing a comparable control group. A hospital-based case-referent study requires a very large size of study and control group. (Author abstract) (In DUT)

53. RESPIRATORY DISEASE MORTALITY IN AGRICULTURAL WORKERS IN EIGHT MEMBER COUNTRIES OF THE EUROPEAN COMMUNITY.

Heller RF, Kelson MC
Dept. Community Medicine, St. Thomas' Hosp. Medical Sch., London, England
Int J Epidemiol; 11(2):170-174 1982

A cooperative study by representatives of eight member countries of EEC into the problem of respiratory disease among agricultural workers is reported. From each country mortality data (routinely collected but often unpublished) were obtained for seven disease categories in the country as a whole, and separately where possible for urban and rural areas, and

agricultural workers. The results indicate that comparable data can be collected from different countries despite variations in local methods of data collection and coding. There are large between-country differences in respiratory disease mortality rates, and data for agricultural workers in France and England and Wales suggest an excess of acute respiratory disease deaths (mainly pneumonia and influenza) among agricultural workers. (Author abstract) (9 Refs)

54. A PRELIMINARY INVESTIGATION OF MORTALITY AMONG WORKERS IN THE POTTERY INDUSTRY.

Thomas TL
Occupational Studies Section, Environmental Epidemiology Branch, NCI, Landow Building, Room 4C16, Bethesda, MD, 20205
Int J Epidemiol; 11(2):175-180 1982

Early studies of mortality among workers in the pottery industry indicated elevated mortality from tuberculosis and nonmalignant respiratory disease. Although raw materials and production processes have changed very little, some fibrous materials such as talc have been introduced into the industry during the past 20 to 30 yr. This prompted a mortality study of pottery workers to examine patterns of fatal disease among individuals exposure to dust particles during the production of ceramics. Deaths among active and retired pottery workers were identified from records of the International Brotherhood of Potters and Allied Workers (IBPAW). Underlying cause of death was determined from death certificates obtained from state vital records offices for 2,924 white males and 946 white females who died between 1955 and 1977. Cause-specific Proportionate Mortality Ratios (PMRs) were calculated using the total United States as a standard. PMRs for tuberculosis and non-malignant respiratory disease were elevated among males and females, particularly those whose occupations were associated with high levels of dust exposure. A significantly elevated frequency of lung cancer occurred exclusively among white males who had been employed in the manufacture of ceramic plumbing fixtures. (Author abstract) (10 Refs)

55. RECENT BIOLOGICAL AND EPIDEMIOLOGICAL RESULTS RELATING TO NICKEL.

Rittmann D
Schmallenberg, W. Germany
Staub Reinhalt Luft; 42(4):140-142 1982

Nickel occurs as a pollutant in the air and water. Major sources of atmospheric nickel include vehicle exhaust and oil-fired furnaces. Industrial exposures occur in the manufacture of batteries, coins, dyes, paints, medical implants, and tools. Nickel is absorbed by inhalation, oral ingestion, percutaneous absorption, and parenteral routes such as from medical implants. Epidemiological studies indicate increased risks of carcinogenesis and teratogenesis for workers exposed to nickel. (24 Refs) (In GER)

56. BIOLOGICAL EFFECT OF SELENIUM.

Michels S, Einbrodt HJ
Aachen, W. Germany
Staub Reinhalt Luft; 42(4):147-148 1982

Selenium can be found in air, water, and food. Occupations involving exposure to selenium include electronics and manufacture of glass, ceramics, and pigments. Selenium may be absorbed by inhalation, oral ingestion, or percutaneous absorption. Selenite and selenate are toxic, while elemental selenium is not. In humans selenium can cause selenium intoxication and possibly carcinogenesis. Selenium is also an essential trace element. (16 Refs) (In GER)

57. TOXICITY AND CARCINOGENICITY OF NICKEL AND ITS COMPOUNDS. A REVIEW OF THE CURRENT STATUS.

Raithel HJ, Schaller KH
Institut fur Arbeits- und Sozialmedizin, Poliklinik fur Berufskrankheiten, Universitat Erlangen-Nurnberg, Schillerstrasse 25-29, D-8520 Erlangen, W. Germany
Zentralbl Bakteriol Mikrobiol Hyg [B]; 173(1/2):63-91 1981

The toxicity and carcinogenicity of nickel and its compounds has been discussed for half a century. Problems coming therefrom are of high relevance concerning occupational medicine. According to the new national and international literature the present findings are described and discussed. Starting with occurrence, refining and occupational hazards, in the first part, toxicologic mechanisms and characteristic symptoms are represented in detail. Inorganic and organic Ni-compounds are handled separately. In the second part of this study we are giving opinions to the questions of carcinogenesis. Experiences of occupationally nickel-exposed workers as well as a review of the topical findings in animal experiments are described. Of importance are questions referring to the different carcinogenic potentials of nickel and its compounds and the influence of techniques of application. Current results on the mechanism of carcinogenesis, which can be derived from animal experiments, are shown. The carcinogenicity of nickel and some water insoluble Ni-compounds in human beings must be seen as a fact. Malignancies in the respiratory tract are observed by workers breathing dust/aerosols of metallic nickel, nickel subsulfide, Ni-oxide and in electrolysis. By critical review of the present literature a carcinogenicity of nickel-carbonyl has to be assumed too. According to this review measures in the field of occupational hygiene and medicine are required. Illness caused by nickel or its compounds should be included in the valid list of occupational diseases in the FRG. (Author abstract) (127 Refs) (In GER)

58. EXPOSURE TO ASBESTOS AND HUMAN DISEASE.

Becklake MR
McGill Univ., Montreal, PQ H3A 2B4, Canada
N Engl J Med; 306(24):1480-1482 1982

Comments are presented on a recent review of the pathogenesis of asbestos-related diseases by Craighead and Mossman, who emphasized shortcomings in our present knowledge. From a clinical point of view, the health risks in relation to exposure to asbestos vary according to environmental factors. While some of these are known (exposure dose, particle size, and fiber type), there are undoubtedly others that are not yet recognized. (19 Refs)

59. THE MORTALITY EXPERIENCE OF UPSTATE NEW YORK TALC WORKERS.

Stille WT, Tabershaw IR
Tabershaw Occupational Medicine Associates, 6110 Executive Blvd., Rockville, MD, 20852
JOM; 24(6):480-484 1982

Deaths for a 31-yr period (1948 to 1978) were analyzed in a historical prospective cohort study of 655 white male talc workers. Death rates from all causes, from cancer of the respiratory system, and from nonmalignant respiratory disease were not significantly different from those of the US white male population. However, significant differences for these causes of death were found among workers who had previous occupational histories. An analysis of the latency periods of the observed lung cancer suggests that exposure to an etiologic agent

during previous work experience may play a role in the development of lung cancer. (Author abstract) (10 Refs)

60. TETRACHLORODIBENZODIOXIN: A SURVEY OF SUBJECTS TEN YEARS AFTER EXPOSURE.

May G
Bolsover, Chesterfield, Derbyshire, Englund
Br J Ind Med; 39(2):128-135 1982

Ten years after an incident following which 79 workers developed chloracne due to exposure to tetrachlorodibenzodioxin a study was undertaken to establish the current state of health of the affected employees remaining in the company's (Coalite Oils and Chemicals Ltd, a subsidiary company of Coalite Group Ltd) employment. The opportunity was used to examine effects on mortality, morbidity, carcinogenesis, reproduction, teratogenicity, fetotoxicity, biochemistry, immunology, and genetic change. Concurrently, control groups were established with which to make comparison. The control groups selected from within the works matched the study group in respect of sex and age but it was not possible to match them for occupation and social status. Half the affected subjects still have minor chloracne. Other than this there is no evidence that they have been adversely affected in any way. (Author abstract) (24 Refs)

OCCUPATIONAL FACTORS: GENERAL

61. MALIGNANT MESOTHELIOMA OF THE PLEURA. REVIEW OF 123 PATIENTS.

Brenner J, Sordillo PP, Magill GB, Golbey RB
(c/o Sordillo) 1275 York Ave., New York, NY, 10021
Cancer; 49(11):2431-2435 1982

One-hundred-twenty-three cases of malignant pleural mesothelioma were reviewed. Exposure to asbestos or to other industrial dusts or chemicals was an important etiologic factor with 24% of patients relating such a history. A history of prior irradiation or previous lung disease was also occasionally noted. Diagnosis was most often made by exploratory thoracotomy, with pleural biopsy or cytology rarely helpful. Except for 9 patients, tumor was confined to the chest at the time of diagnosis, but in 33 of the remaining 114 patients, spread to the abdomen or distant metastasis was seen during the course of disease. Surgery and radiotherapy were ineffective in preventing local recurrence. There were only three major responses to chemotherapy in 111 trials. Median survival was 12 mo, and only seven patients (5.6%) lived more than 5 yr. Patients with epithelial mesothelioma and Stage I disease had the most favorable prognosis. (Author abstract) (35 Refs)

62. OCCUPATION AS AN ETIOLOGIC FACTOR IN RENAL CELL CARCINOMA (MEETING ABSTRACT)

Asal NR, Bryan JS, Geyer JR
No affiliation given
77th Annual Meeting of the American Urological Association, Inc., May 16-20, 1982, Kansas City, Missouri. American Urological Association 254 pp., 1982.

This study was designed to investigate the significance of occupation as an etiologic factor in renal cell carcnoma. Two hundred patients with this diagnosis, who were hospitalizd in Oklahoma City and Tulsa between 1977 and 1980, were matched with 400 controls according to age, sex, race and hospital. Data was collected from hospital records and from questionnaires which were mailed to the living patients, controls (both hospital and general population) and next of kin of the deceased individuals. In addition to the occupational history, other risk factors were analyzed such as family history of cancer, smoking, alcohol consumption, use of hormones, previous illness and radiation therapy. The incidence of renal cell carcinoma was higher than expected in several occupations, including dry cleaners, truck drivers, welders/plumbers and physicians/dentists. There were five dry cleaners among the cases compared to none in the controls. Also 12% of the cases and 5% of the controls responding to the questionnaire were truck drivers. (no Refs)

63. WHAT PROPORTION OF CANCER IS OCCUPATIONAL IN ORIGIN? (MEETING ABSTRACT)

Chovil AC
Department of Preventive Medicine and Community Health, School of Medicine, University of South Carolina, Columbia, SC
J Occup Med; 24(4):331 1982

Occupational cancer is defined as 'any cancer that would not have developed in the absence of some defined occupational exposure.' The background of the present state of knowledge of identified cancer is reviewed, and the development of the controversy over what proportion of all cancer this represents is discussed. It is suggested that most occupational cancers come from relatively small identified sources. Data from the Workmen's Compensation Board of Ontario is presented to suggest that occupational causes only contribute to about 1% of cancer deaths. (no Refs)

EPIDEMIOLOGICAL FINDINGS INVOLVING SPECIFIC AREAS

64. EPIDEMIOLOGICAL ASPECTS OF LUNG CANCER.

Neumann G
Hohe Strasse 28, D-7000 Stuttgart 1, W. Germany
Prax Klin Pneumol; 36(2):67-71 1982

The occurrence of lung cancer in the Federal Republic of Germany (FRG) is analyzed for general trends, regional variations, and differences among different age, sex, and social groups. In the FRG the overall incidence of lung cancer increased between 1952 and 1978. The number of deaths among men due to lung cancer increased from 6,296 to 21,084, compared with an expected increase to 8,260. Among women deaths increased from 1,356 to 3,664, compared with an expected increase to 2,307. The increase in absolute numbers of deaths increased more sharply than did mortality rates. Because of the poor prognosis for lung cancer, mortality statistics provided a relatively accurate estimation of the incidence of disease. Regional data indicated higher death rates in the city of West Berlin, Hamburg, and Bremen than in the more rural states of Baden-Wurttemberg and Bavaria. Men had higher death rates than women. Sexual differences were age-dependent, with the greatest difference at age 70. Age distributions showed a shift in maximum rate from the 65-69-yr range to the 75-79-yr range for men and from the 75-79 yr range to the 85-89-yr range for women. Studies conducted in the FRG and other countries indicates higher rates of lung cancer deaths among lower social classes than among the well-to-do. Death rate for lung cancer and gastric cancer showed an inverse rela-

tionship; a high rate of one type generally excluded a high rate of the other type. (23 Refs) (In GER)

65. CHANGING PATTERNS OF LUNG CANCER IN THE UNITED STATES.

Blot WJ, Fraumeni JF
Environmental Epidemiology Branch, NCI, Bethesda, MD, 20205
Am J Epidemiol; 115(5):664-673 1982

Although mortality from lung cancer increased throughout the United States during 1950-1975, the rate of change varied according to sex, race, and geographic sector. A pronounced shift in the geographic pattern of lung cancer was seen in white males. The elevation in rates in urban counties of the north in the 1950s faded over time and was not observed in the 1970s. The highest rates during 1970-1975 were in the south, both in rural and urban areas, particularly at younger ages. The sharpest rise in US mortality rates was reported among nonwhite males. Cohort analysis revealed that for males born before 1885 age-specific rates among whites exceeded those among nonwhites by nearly 50%, but for those born after 1915 a 50% excess was seen among nonwhites. Among nonwhite males the highest mortality in the 1970s occurred in urban areas of the south. Among females the rate of increase in lung cancer mortality was higher in the 1970s, but racial and geographic differences tended to be minor. Cigarette smoking accounts for a substantial part of the shifting patterns of lung cancer, but it is likely that other factors are involved, including industrial exposures (eg, exposure to asbestos in shipyards during world War II) and possibly nutritional deficiencies and other determinants yet to be identified. (Author abstract) (17 Refs)

66. MALIGNANT MELANOMA AND DRINKING WATER CONTAMINATION.

Aldrich TE, Peoples AJ
Dept. Epidemiology and Public Health, Univ. Miami Sch. Medicine, Miami, FL, 33101
Bull Environ Contam Toxicol; 28(5):519-523 1982

A cluster analysis of data on the incidence of melanoma in three areas of Brevard County, Florida, showed a north-south gradient, with a significantly increased number of new melanoma cases in South Brevard County in 1979 compared to the expected values calculated using the Third National Cancer Survey data. An analysis of municipal water samples for trihalomethane (THM) levels (chloroform, bromoform, chlorodibromomethane, and bromodichloromethane) showed a similar north-south gradient with a marked increase in THM levels in South Brevard County. These results may indicate a possible etiologic relationship between melanoma and THM exposure. (9 Refs)

67. INCIDENCE AND DISTRIBUTION OF LUNG CANCER IN GREECE.

Trichopoulos D, Kalandidi A, Tzonou A
Dept. Hygiene and Epidemiology, Univ. Athens Medical Sch.-Goudi, Athens, Greece
Excerpta Med Int Congr Ser; 558:10-17 1982

Two controlled epidemiologic studies on the relationship between smoking Greek cigarettes and the development of lung cancer (LC) are discussed. A strong association between smoking and the development of LC was observed in a study of 862 male LC patients treated between 1950 and 1962, and the probability increased significantly with increased tobacco use. A study of 40 nonsmoking women with LC other than adenocarcinoma or terminal bronchial (alveolar) carcinoma whose husbands smoked demonstrated that such women had a risk of developing LC that was 2x that of nonsmoking women whose husbands were also nonsmokers. (8 Refs)

68. EPIDEMIOLOGY OF LUNG CANCER IN CYPRUS: RISK FACTORS.

Demetriades A, Panayotopoulos P
Nicosia General Hosp., Nicosia, Cyprus
Excerpta Med Int Congr Ser; 558:32-40 1982

Epidemiology of lung cancer (LC) in Cyprus based on 300 patients, 170 (150 males, 20 females) in the period between 1968-1974 (Group A) and 130 (114 males, 16 females) in the period between 1975-1979 (Group B), was studied to detect risk factors connected with the disease. Incidence of LC, histology, age distribution, occupation, general air pollution, smoking habits, and relationship between profession (smokers) and type of cancer are presented. Of the 150 male patients from Group A, 137 were smokers. The types of LC developed by heavy smokers were 55% epidermoid, 11% oat cell carcinoma, 15% adenocarcinomas, 18% undifferentiated and 1% alveolar. The relationship between smoking dose and the type of LC in Group A for both sexes is presented. Comparing the three categories of occupation with regard to type of cancer, for the 53 patients with 'open air occupation' the ratio of epidermoid/oat to adenocarcinoma was 9.25:1, for the 60 patients with 'dusty occupation' 2.4:1, and for the 37 patients with 'indoor occupation' 3.14:1. The findings for Group B were similar to those of Group A. According to this study, high daily dose of smoking (number of cigarettes/day) and period of smoking, high concentration of smoke, and early commencement of smoking can be considered as risk factors; occupational pollution and dust are of less importance. (9 Refs)

69. CHILDREN'S CANCER IN REPUBLIC OF ARGENTINA: EPIDEMIOLOGIC STUDY FROM JANUARY TO DECEMBER 1979.

Cebrian de Bonessana A, Hde Macchi G, Schwartzman E, Roca de Garcia C, Rey G, Bouguard E, Trabatoni A, Joaquin E, Fontana A, Conforti C, Prever A
Centro de Estudios Oncologicos, Fundacion Maissa, Buenos Aires, Argentina
Rev Latinoam Oncol Clin; 13(2):25-35 1961

Incidence of cancer was studied in people 0-19 yr old in six centers covering almost the whole country during 1979. Two hundred ninety one new cancer cancer patients were studied. Of all the patients with cancer, 36 had sympathoblastoma, 21 had Wilms's tumor, 27 had retinoblastoma, 5 had teratoma, 26 had carcinoma, 9 had Eweing's sarcoma, 19 had Hodgkin's disease, 33 had non-Hodgkin's lymphoma, 7 had osteosarcoma, 21 had histiocytosis, 21 had rhabdomyosarcoma, 13 had soft tissue sarcoma, 42 had tumors of CNS, and 11 had others. Incidence of cancer in different hospitals was 2-25/1,000. Incidence in males was 20% higher; incidence in less than 1 yr old was 5% and in 1-5 yr old was 45%. For males patients 1-5 yr old, the predominant histologic types were sympathoblastoma, retinoblastoma, teratoma, and for females Wilms' tumors, rhabdomyosarcoma, and retinoblastoma. (12 Refs) (In SPA)

70. CANCER OF THE BREAST IN BALTIMORE BLACK WOMEN.

Miller JM, Kong BW
Provident Hosp., Inc., 2600 Liberty Heights Ave., Baltimore, MD, 21215
Md State Med J; 31(5):52-53 1982

The leading cause of death from malignancy in white women (WW) is breast cancer and the incidence is generally higher in more affluent socioeconomic groups. In Baltimore, the age adjusted mortality rates for WW changed little in the period 1970-1979 but in black women (BW) an increase was found in age adjusted death rate (22.28 WW vs 31.33 BW in 1979). This higher death rate in BW is paradoxically associated with a lower socioeconomic level which may be due to limited access to medical treatment. (17 Refs)

71. CANCER IN INDONESIA.

Sutnick AI, Gunawan S
Medical Coll. Pennsylvania, 3300 Henry Ave., Philadelphia, PA, 19129
JAMA; 247(22):3087-3088 1982

The health care system in Indonesia is outlined and analyzed briefly, and cancer incidence is discussed. Based on 'household survey techniques used from 1972-1980, the rising importance of cancer is suggested. Cancer of the uterine cervix and breast are the two most common types of cancer in Indonesia; cancer of the nasopharynx, liver, skin (especially of the legs and feet) and lung and choriocarcinoma are among the 10 most frequent. Various environmental factors that might influence cancer statistics are mentioned. The government of Indonesia is addressing the growing cancer problem through various programs. (2 Refs)

72. TIME TRENDS OF PANCREATIC CANCER MORTALITY IN THE STATE OF MARYLAND (MEETING ABSTRACT)

Lin RS, Farrell K
Division of Environmental Disease Control, Department of Health and Mental Hygiene, Baltimore, MD
109th Annual Meeting of the American Public Health Association, November 1-5, 1981, Los Angeles, California. American Public Health Association 390 pp., 1981.

Time trends of mortality from pancreatic cancer by race, sex, and age were analyzed in the State of Maryland from 1965 to 1979. A total of 4,605 pancreatic cancer deaths of Maryland residents are registered with the Vital Records during the 15-year period. Among White males, there was no signficant change in age-adjusted death rates within this period. However, an increase of 36.5 percent in the age-adjusted death rate from 1965-67 to 1977-79 was noted among White females. The increase predominated among middle-age women. A two-fold increase in death rates among White women, aged 50-59, and a 1.6-fold increase among White women, aged 60-69, were found over this time span. The increase in mortality from pancreatic cancer among women was particularly remarkable in the last four years. Similar time trends were also observed among non-White women. Gynecologic disturbances or hormonal factors have been suggested to be related to the etiology of pancreatic cancer. The increasing trends of hysterectomy and oophorectomy as well as steroid hormone intake among US women may account for the recent increasing trends of pancreatic cancer deaths in females. (no Refs)

73. EPIDEMIOLOGY OF BREAST CANCER (MEETING ABSTRACT)

Nottle PD
No affiliation given
Breast Cancer Symposium, May 29-30, 1981, Melbourne, Australia Monash University; 1981

Despite intensive epidemiological research, we still do not have an accepted cohesive theory on the etiology of breast cancer. It is the commonest form of cancer amongst women in the western world, and each year in Australia, approximately 4,500 new cases are detected and 2,000 patients die of the disease. The risk of developing the disease during the lifetime of a female is one in fifteen. There are, however, major geographical differences in the incidence of the disease which have yet to be adequately explained. Many factors appear to influence the disease and have been used to explain these geographical differences. In trying to find a common thread amongst all these variables, the triad of genetic suspectibility, appropriate hormonal environment and exogenous carcinogens combine to produce a patient who is at greatest risk of developing breast cancer. (no Refs)

74. EPIDEMIOLOGIC SURVEY OF BLADDER CANCER IN GREATER NEW ORLEANS (MEETING ABSTRACT)

Sullivan JW
No affiliation given
77th Annual Meeting of the American Urological Association, Inc., May 16-20, 1982, Kansas City, Missouri. American Urological Association 254 pp., 1982.

The primary ancestry of the cases and the controls was not statistically different, but the Jewish population had a significantly greater increased incidence of bladder cancer. Overall, a significantly greater number of cases smoked filtered cigarettes, commenced consumption of artifical sweetened beverages at an ealier age, drank artificial sweetened beverages for a greater number of years, consumed a greater number of glasses of artificial sweetened beverages per week and related a history of urinary tract infections. A significantly increased incidence of bladder cancer was noted in individuals employed by certain types of companies, by certain job titles, and by certain job material handled. Analysis of the data failed to show any significant difference in years of consumption of coffee, amount of various types of coffee or tea consumed, consumption of various alcoholic and non-alcoholic beverages including source of drinking water, usage of hair dye, incidence of diabetes mellitus, family history of urinary cancer, history of pelvic irradiation or bladder stones. (no Refs)

75. CANCER OF THE CAVUM IN THE CHILD IN TUNISIA HISTO-RADIO-TOMODENSITOMETRIC CORRELATION REVIEW OF 47 CASES (MEETING ABSTRACT)

Hamza R, Toulbi S, Zaouche A, Kammoun M, Ellouze R, Bardi I
No affiliation given
Nineteenth Congress of the European Society of Pediatric Radiology, April 22-24, 1982, Prague, Czechoslovakia. European Society of Pediatric Radiology 124 pp., 1982.

One of the most frequent ENT (ear, nose, throat) cancers in Tunisia is the cancer of the cavum. We have seen in three years 320 cases. They all had a tomodensitometric examination. On these 320 cases 47 were between the age of 6 and 15. This peculiarity which is seen essentially in North Africa is now being investigated by researchers looking for etiological factors, especially genetic, racial and viral ones. The authors de-

scribe their clinical and radiotomodensitometrie experience and they look for a correlation between the tumoral density (determined in Housfield units) and its histological nature. (no Refs)

76. PATHOLOGY IN CONSIDERATION OF EPIDEMIOLOGY IN GASTRIC CANCER (MEETING ABSTRACT)

Ostertag H
Pathologisches Institut der Medizinischen Hochschule, Karl-Wiechert-Allee 9, D 3000 Hannover 61, W. Germany
J Cancer Res Clin Oncol; 103(Suppl):A2 1982

Epidemiology and patho-histological examinations on tumor typing have demonstrated that the world wide differences in incidence as well as the observed retrogression of gastric cancer probably results from nutritional habits. Presumably, the difference in incidence between rural and urban areas, also established in this country, can be associated with the same causes as the world wide differences in frequency. Whether these differences in nutritional habits are directly related to the carcinogenesis or if they result in chronic-atrophic gastritis which is a more important facultative risk factor must be elucidated. From the more than coincidental carcinoma development in gastric stump it can be presumed that the bile reflux is another etiologic factor. This or the chronic atrophic gastritis is obviously of importance for the manifestation of tumor site, as can be concluded from the definite predominance of localization within the antrum and small curvature. From studies in histopathology, it can be derived that human gastric cancer, with all of its histological types, develops from regenerating zones of the gastric mucosa ie the glandular neck and not from the differentiated superficial epithelium or the gastric glands. It is well known that the depth of infiltration is decisive for the prognosis of gastric cancer. However, this is only an indication of the probability for already present metastases in regional lymph nodes which has clearly been demonstrated through examinations on lymphadenectomy in advanced and early gastric cancer. (no Refs)

77. CANCER INCIDENCE IN THE REPUBLIC OF PANAMA, 1974-78.

Reeves WC, Valdes PF, Brenes MM, De Britton RC, Joplin CF
Gorgas Memorial Lab., P. O. Box 935, APO Miami, FL, 34002
JNCI; 68(2):219-225 1982

Data were examined from the Panama National Cancer Register, which was created by the Panamanian National Oncology Institute in 1974 to record data on all histopathologically diagnosed cancers in the Republic. Age- and sex-specific incidence rates were summarized for all cancers registered between 1974 and 1978. The age-adjusted incidences of invasive cervical cancer (37.8/100,000 population), penis cancer (1.9/100,000), and oral cancer (male, 3.2/100,000; female, 3.7/100,000) were among the highest in the world. In addition, both male and female genital cancers were clustered in rural Herrera Province (age-adjusted incidence: cervix, 84.7; and penis, 4.3). (Author abstract) (23 Refs)

78. ENVIRONMENTAL CHARACTERISTICS OF REGIONS IN CHINA WITH HIGH INCIDENCE RATES OF LUNG CANCER.

Gao F, Sun J
Inst. Geology, Academia Sinica, Shanghai, People's Republic of China
Kexue Tongbao; 26(22):1388-1390 1981

Results of a preliminary survey of lung cancer mortality in various regions of China are reported. In general, the mortality rates were higher in big cities than in cities of medium or small size. They were also higher in industrial cities, especially in mining areas (eg tin mining), and coastal cities. The major contributing factor to high lung cancer incidence rates is believed to be environmental pollution. (1 Ref) (In CHI)

79. CHARACTERISTIC FEATURES OF CANCER IN TURKEY.

Firat D
Res. Inst. Oncology, Univ. Hacettepe, Ankara, Turkey
Kanser; 11(1):31-40 1981

Cancer is the second most frequent cause of death in Turkey. The cancer mortality and incidence rates calculated from available although somewhat insufficient data, indicate a trend similar to many other countries and may well be higher than estimated. There are many interesting points and particular distribution of the type of cancers both for adults and children in both sexes which deserve further studies from the etiological and epidemiological point of view. (Author abstract) (5 Refs)

80. A STUDY OF THE DEATH RATE IN JAPAN BASED ON CAUSE AND SOCIAL ENVIRONMENT - APPLICATION OF MULTIVARIATE STATISTICAL ANALYSIS.

Iwamoto M, Dodo H, Yoneda J, Ueda Y
Dept. Hygiene, Yamaguchi Univ. Sch. Medicine, Ube, Japan
Nippon Eiseigaku Zasshi; 36(4):678-686 1981

A varimax rotation was applied to statistical data collected during 1970 and 1975 in all 46 prefectures in Japan after performing a principal component analysis of 12 major causes of death and 7 sociogeographical conditions. The 12 major causes of death included malignant neoplasms, stomach cancer, cerebrovascular disease, lung cancer, heart disease, pneumonia and bronchitis, and the environmental conditions included primary industrial rate, mean temperature, water and sewer diffusion rates. Three principal factors were arrived at by factor analysis and varimax rotation. The first factor explained 29.26% of the total variance observed in the causes of death due to urbanization. That is to say, the major causes of death in urban areas was lung cancer and gastric cancer and that in rural areas was accidents. The second factor explained disease patterns related to temperature. That is, major causes of death were liver cirrhosis, tuberculosis, and hypertension in western Japan and were stomach cancer and cardiovascular disease in eastern Japan. The third factor explained characteristics associated with the disease patterns in northern agricultural areas of Japan. (11 Refs) (In JPN)

81. AETIOLOGICAL ASPECTS OF BLADDER CANCER IN URINARY BILHARZIA.

Mee AD
Urology Unit, Royal Postgraduate Medical Sch., Hammersmith Hosp., London, England
Saudi Med J; 3(2):123-128 1982

The etiology of urinary bladder cancer (BC) is discussed in relation to bilharzia, the incidence of which is much higher in Egypt than in Saudi Arabia. Beta-glucuronidase in the urine has been linked to BC, increased levels of which occur in patients with urinary infections caused by Escherichia coli and Pseudomonas, which are common causes of secondary infections in urinary bilharziasis. However, experimentally, this enzyme has not been proven to be a significant bladder car-

cinogen. There is experimental evidence that nitrosamines which may form in the urine of some people produce BC. Variations in dietary nitrate could account for the low incidence of BC in the Arabian peninsula and the higher incidence in Egypt. Egyptian farmers have a higher incidence of BC as a complication of bilharzia than professional and business classes. There was also a greater incidence of nitrosamines in the urine of patients with BC and bilharzia than in patients with other cancers of the bladder alone or in patients with bilharziasis alone. The results were not conclusive that nitrosamines were the precipitating cause. The possible role of immunocompetence in urinary bilharziasis is discussed. The present study indicates that carcinoma of the bladder in patients with urinary bilharziasis is due to several factors including carcinogens in the urine of the bladder, and depressed immunocompetence caused by schistosoma antigen. (21 Refs)

82. TUMOURS IN ICELAND: 6. TUMOURS OF THE URINARY BLADDER, URETER AND URETHRA. A HISTOLOGICAL CLASSIFICATION AND SOME EPIDEMIOLOGICAL AND ENVIRONMENTAL FACTORS.

Perry SB, Thorallson P, Hallgrimsson J
(c/o Thorallson, P.) Dept. Pathology, Univ. Iceland, P. O. Box 150, 121 Reykjavik, Iceland
Acta Pathol Microbiol Scand [A]; 90(3):175-183 1982

All primary tumors from the urinary bladder, ureter and urethra submitted for a histological diagnosis in Iceland during the 20 yrs, 1955-1974, and available for review, were typed histologically according to the World Health Organization Classification published in 1973. The series included 237 tumors, and of these 94.5% were from the bladder. Transitional cell carcinomas constituted the largest group, or 120 in males and 77 in females. For transitional cell carcinomas there was a good correlation between growth patterns, grades and pathological stages. Most of the papillary carcinomas was of Grades 1 and 2 and all purely infiltrating carcinomas were of Grade 3. The papillary carcinomas were predominantly superficial and the purely infiltrating were deeply invasive and the degree of cellular anaplasia increased with the depth of invasion from the lamina propria to perivesical tissue and other organs. The incidence of transitional cell carcinoma of the urinary bladder is rising in Icelanders and the incidence in females is the highest reported among European nations. Industrial chemical carcinogens are an unlikely cause of bladder carcinoma in Icelanders but cigarette smoking, and a high consumption of coffee and salted food may play an important role. (Author abstract) (19 Refs)

83. EPIDEMIOLOGY OF HEPATIC, GALL BLADDER, AND PANCREATIC CANCER IN JAPANESE.

Aoki K, Sasaki R
Dept. Preventive Medicine, Nagoya Univ. Sch. Medicine, Nagoya, Japan
Nippon Rinsho; 40(1):8-14 1982

Factors affecting the occurrence of hepatic, gall bladder, and pancreatic cancer were studied epidemiologically using death statistics. Of the three types of cancer, the age-adjusted death rate for both men and women between 1950-1978 was highest for hepatic cancer. The death rate for hepatic cancer between 1960-1975, was fairly steady for men, and was decreasing for women. There was a slight creeping up of rate between 1975-1978 in both men and women. The rates of death due to pancreatic or choledochal cancer showed an increase in both groups. According to birth cohorts, little change in death rates due to cancer were observed in the men born between 1890-1930. The death rates have decreased for the birth cohorts of women born since 1900. Deaths due to choledochal cancer increased for both men and women between 1969-1978. Higher rates of hepatic cancer were observed in both men and women living in Kyushu and Yamagata Prefecture, in men living in Hiroshima and Osaka, and in women living in Tokushima. Death rates due to pancreatic cancer were high in Hokkaido and Aomori Prefecture. Although none of the three organs has direct contact with the outside environment, there is an increase in environmental carcinogenic factors. It was of interest that latent or complicated infections were observed frequently associated with the cancers. (43 Refs) (In JPN)

84. HEPATOCELLULAR CANCER IN SWEDEN: INCIDENCE 1961-1962 AND 1971-1972.

Axelsson G
Dept. Environmental Hygiene, Univ. Gothenburg, Box 33031, S-400 33 Gothenburg, Sweden
J Chronic Dis; 35(6):459-466 1982

The present study was undertaken to compare the incidence of hepatocellular cancer in Sweden during 1961-1962 and 1971-1972, and to evaluate the geographical distribution of the disease. Another aim was to determine whether a retrospective analysis of hospital records of individual cases could provide information on relevant risk factors, in particular cirrhosis, previous diseases, occupational exposure and alcohol consumption. The incidence of hepatocellular cancer in Sweden has increased, particularly in the highest age groups. A difference in incidence for males between the three largest cities in Sweden and the remainder of the country is demonstrated. The proportion of autopsies in Sweden, particularly in the highest age groups, has increased between the two time periods, which could explain part of the increase in incidence. Information from the hospital records indicate that cirrhosis and alcohol abuse among the male cases in the three largest cities are more common than in the remainder of Sweden. (Author abstract) (15 Refs)

85. ORAL CANCER EPIDEMIOLOGY IN SCOTLAND (MEETING ABSTRACT)

Boyle P, Scully C, Gillis CR
International Agency for Research on Cancer, Lyon, France
Twenty-third Annual General Meeting of the British Association for Cancer Research, March 29-31, 1982, Edinburgh, Scotland. British Association for Cancer Research 78 pp., 1982.

The epidemiology of oral cancer in Scotland appears not to have been studied and it is now 10 years since the last published major study in England and Wales. We have therefore examined mortality from oral cancer in Scotland since 1911 and incidence since 1963. The all-ages age-standardized mortality rates for oral cancer fell during the 67 years as did the rates for those subsites for which data were available-lip, tongue and rest of mouth. Similar declines in mortality were observed in both sexes, these mirroring the falls in incidence. Falls in mortality and incidence were observed in all age groups. A strong birth cohort effect was found for all subsites with each cohort born in ten year periods subsequent to that centered on the year 1878 experiencing declining levels of mortality from oral cancer. (1 Ref)

OTHER EPIDEMIOLOGICAL FINDINGS

86. SOCIAL CLASS AND AGE AT DIAGNOSIS OF HODGKIN'S DISEASE: NEW EPIDEMIOLOGIC EVIDENCE FOR THE 'TWO-DISEASE HYPOTHESIS'.

Gutensohn NM
677 Huntington Ave., Boston, MA, 02115
Cancer Treat Rep; 66(4):689-695 1982

The bimodality in the age-incidence pattern of Hodgkin's disease (HD) suggests that the disease may result from two causal pathways with differing age peaks. Among young adults, HD may develop as a rare consequence of a common infection (probably viral), with risk increasing with age at time of infection. However, among older persons, HD may result from other causes, probably similar to those of the other lymphomas. We evaluated this hypothesis in a population-based, case-control study in eastern Massachusetts involving 326 newly diagnosed cases (patients greater than or equal to 15 years of age) and 650 population controls. These subjects were compared for factors in childhood environment that influence age of exposure to common viruses, including subship size, parental education, and type of housing. Among young adult (15-39 years of age), risk of HD was associated with small family size, single-family housing, and relatively high maternal education, consistent with the delayed infectious exposure hypothesis. Among middle-aged persons (40-54 years of age), a similar pattern of social class risk factors was present. However, among older persons (greater than 55 years of age), risk was not associated with social class; if anything, patients were of somewhat lower social class background than controls. These findings are consistent with the 'two-disease hypothesis,' in that social class risk factors differed between younger and older persons. These findings, coupled with other epidemiologic observations, suggest that the pathogenesis of HD among older persons is independent of that among younger persons. (Author abstract) (10 Refs)

87. RISK FACTORS ASSOCIATED WITH BREAST CANCER. A RETROSPECTIVE EPIDEMIOLOGICAL STUDY.

Garcia-Sainz M, Borrego-Roman R, Diaz-Perches R
Hosp. de Oncologia, Centro Medico Nacional, Instituto Mexicano del Seguro Social, Mexico City, Mexico
Gac Med Mex; 117(8):323-331 1981

Risk factors for breast cancer were assessed in a group of 789 women without demonstrable breast pathology and 111 with adenocarcinoma of the breast. Age, marital status, and occupation were linked to cancer: 54% of the cancer patients were 60-79 yr old, and 35% were widowed. Single, younger women were more likely to be clerks, and married women and widows more likely to be housewives. Greater than 11 yr between menarche and first full-term pregnancy was a risk factor in this population. An even greater risk value was found for nulliparous women compared to those who had had 5 or more children. Breast feeding for the multiparous women was seen as a protective factor against breast cancer. Women who became menopausal after 55 yr of age are at greater risk than those who are menopausal by 45. A woman is at risk if her sister has had cancer but less so if the illness was contracted by a mother or aunt. However, in the Mexican population examined it was not possible to define a group of women who are at high risk for breast cancer. (19 Refs) (In SPA)

88. CERVICAL CANCER AND ITS RISK FACTORS. A STUDY OF CASES AND CONTROLS.

Zuloaga Posada LL, Velez CS
Facultad de Enfermeria, Universidad de Antioquia, Bogota, Colombia
Rev Colomb Obstet Ginecol; 32(4):219-232 1981

The characteristics of 81 cervical cancer patients were compared with those of 162 women with negative cervical pathology results. The age of 56% of the patients was in the range 41-60 yr; controls were slightly younger but within a 5-yr range. Characteristics compared were occupation, income, number of abortions and pregnancies, use of contraceptive agents, occurrence of genital infections prior to cancer, frequency of sexual relations, number of sexual partners and age at menarche, first sexual activity, and first pregnancy. Information was gathered in home interviews and through clinical case histories. The neoplastic stages at which the cancer was clinically diagnosed in 60% of cases were Grade IIIB and IV. Histopathological diagnosis showed that 88% of the neoplasms were invasive and 11% in situ. The advanced level of cancer before diagnosis accounts for the 20% mortality rate observed during the study, which presented comparison of some factors. A significant difference was found in the number of patients living in rural areas compared to the number of controls in urban areas. Cancer patients tended to begin sexual activity at an earlier age, were younger at their first pregnancy, and were more likely to have experienced five or more pregnancies. (39 Refs) (In SPA)

89. PANCREATIC CANCER (MEETING ABSTRACT)

Gold EB, Diener M
Department of Epidemiology, Johns Hopkins University, Baltimore, MD
109th Annual Meeting of the American Public Health Association, November 1-5, 1981, Los Angeles, California. American Public Health Association 390 pp., 1981.

Pancreatic cancer (PC) is a leading cause of death from cancer in the US. Its incidence has been increasing, but little is known of its etiology. A case-control study began in Baltimore in 1978 to investigate factors associated with PC. Over 170 case-neighborhood control pairs have been interviewed. Analysis of the first 107 pairs suggests that dietary carcinogens may be important. More cases than controls frequently ate salami or bologna (matched pairs odds ratio (OR) equals 2.5), bacon or sausage (OR equals 1.6), eggs (OR equals 2.1), and smoked fish (OR equals 2.1), or beef (OR equals 5). A protective effect was suggested for frequent consumption of high fiber foods such as whole grain breads (OR equals 0.05) and raw fruits or vegetables (OR equals 0.11). A protective effect was suggested for tonsillectomy (OR equals 0.25), also reported for other cancers, but an increased risk was found for living on a farm and having farm animals (OR equals 2.0), and for low income (OR equals 3.8). These preliminary findings suggest that dietary factors may be involved in the etiology of PC. (no Refs)

90. CASE-CONTROL STUDY OF KIDNEY CANCER (MEETING ABSTRACT)

McLaughlin JK, Mandel JS, Blot WJ, Schuman LM
University of Minnesota, Minneapolis, MN
109th Annual Meeting of the American Public Health Association, November 1-5, 1981, Los Angeles, California. American Public Health Association 390 pp., 1981.

A population based interview case-control study of kidney cancer (renal cell 189.0 and renal pelvis 189.1) was conducted in the 7 county Minneapolis St Paul SMSA (standard metro-

politan statistical area). Four hundred and ninety-five cases of renal cell and 74 cases of renal pelvis cancer were interviewed (the largest epidemiologic study to date of these sites). Controls (1190) were selected from population based sources and frequency matched on age and sex to cases. Interview response rates of 98% for cases and 97% for controls were achieved. Because of the exploratory nature of the study, many factors were examined including ethnicity and weight, beverage, diet, smoking, drugs, disease and occupational histories. For renal cell cancer the only ethnic group with an elevated risk was German females. Significantly elevated odds ratios were found for males and females for both renal cell and renal pelvis cancer who smoked cigarettes. Males who consumed diet soda had significantly elevated odds ratios. Other elevated odds ratios have been found for certain drugs, industries and occupational exposures. Indices for Vitamins A, C, fat, total alcohol, cruciferous vegetables, phenacetin and acetaminophen have been developed. (no Refs)

91. EPIDEMIOLOGIC FINDINGS IN CANCER OF THE NASOPHARYNX (MEETING ABSTRACT)

Mabuchi K, Kessler II
Department of Epidemiology and Preventive Medicine, University of Maryland School of Medicine, Baltimore, MD
109th Annual Meeting of the American Public Health Association, November 1-5, 1981, Los Angeles, California. American Public Health Association 390 pp., 1981.

Nasopharyngeal cancer (NPC) is an extremely rare type of cancer in the US. To investigate its etiology, an epidemiologic study was undertaken in 39 cases and a similar number of demographically matched controls from five US metropolitan areas (Minneapolis/St Paul, Detroit, Miami/Dade County, New York City, and Buffalo/Erie County). Detailed information of environmental and medical factors of possible etiologic significance were obtained by personal interviews and medical record abstraction. Results revealed that more NPC patients than controls were foreign-born. Among males, more of them had been exposed to paints, dyes, dry-cleaning, and other chemicals. Among females, significantly more NPC patients than controls had been exposed to household animals, particularly cats and birds. No differences were observed between cases and controls in the frequency of exposure to other toxic or carcinogenic agents, tobacco, snuff, alcohol, tea, or coffee. Findings from further analyses of the data are presented and the etiologic significance is discussed. (no Refs)

92. HEAD AND NECK MALIGNANCY IN A YOUTHFUL POPULATION (MEETING ABSTRACT)

Clark RM, Rosen IB
University of Toronto, Toronto, Ontario, Canada
Joint Meeting of the Society of Surgical Oncology and Society of Head and Neck Surgeons, April 18-23, 1982, Marco Island, Florida. The Society of Surgical Oncology and the Society of Head and Neck Surgeons 265 pp., 1982.

Since malignancy in the head and neck area usually afflicts those of middle age and older, little knowledge and experience has been established in this disease affecting the younger population. A retrospective survey of 351 patients under 35 with head and neck cancer was carried out and in which 118 cases occurred under the age of 25. Sites studied included lip 49, tongue 21, salivary 74, oral cavity 24, nasopharynx 89, oropharynx 9, laryngopharynx 4, nose 7, ear 13, sinus 25, larynx 36. The median age range varied from 6-32 years of age. Mucosal cancer was usually treated by primary irradiation and salvage surgery and salivary disease was treated by primary surgery and adjuvant irradiation therapy. Survival rates on a five year basis include lip, 93%, tongue, 56%, salivary 91%, nasopharynx 55%, oropharynx 86%, laryngopharynx 1/2 % , sinus 45%, larynx 93%. Examination of etiology did not reveal any consistent presence of exposure to radiation, tobacco, alcohol addiction or genetic predisposition. It would appear that head and neck malignancy in the young is a substantial entity in head and neck surgical practice requiring wider acquaintance with this group and site individualization of treatment. The favorable five year results support the concept of aggressive treatment particularly since this group of patients is capable of tolerating adjuvant therapy where indicated. (no Refs)

93. EPIDEMIOLOGY OF CARCINOMA OF THE ESOPHAGUS (MEETING ABSTRACT).

Dorken H
I. Med. Univ. -Klinik, Hamburg, W. Germany
Ninety-eighth Congress of the German Society for Surgery, April 22-25, 1981, Munich, W Germany Deutsche Gesellschaft fur Chirurgie; :A1 1981

There are approx 60 deaths due to (squamous) cancers of the esophagus (1.26% of all tumors) in Hamburg each yr. Mortality figures for the United States (4.3 per 100,000 men and 1.1 per 100,000 women, whites, standardized, 1975) are in keeping with those of most Western countries. There is generally a close correlation with smoking habits and alcoholism. In contrast, in Asia and Africa we find severe 'epidemics' whose max figures approach those for Western total cancer mortality rates, especially in South Africa (Transkei), around the Caspian Sea (Iran, USSR), and in China. In systematic, extensive field studies in all 3 epidemic areas it has been impossible to prove the etiologic influence of environmental factors (mycotoxins, nitrosamines, trace elements, etc). In China, where in certain areas (Linxian, Henan Province) a case of cancer of the esophagus is diagnosed every 8 hr (1,000/yr in a population of 700,000) early diagnosis is being attempted in highly organized campaigns (cytology by means of balloon catheter). Surgical outcome has resulted in a 5 yr survival rate up to 90% as a consequence. Still more astonishing are Chinese Colleague's reports of a corresponding tumor in chickens (squamous cancer of the gullet) which is epidemic in these areas as well. Hence a cancer in man and his hen both in the same house has been discovered (cluster formation). This first epidemiologic discovery of a coincidence of the same cancer in man and his domestic animals must raise the question of viral etiology. (no Refs) (In GER)

94. INVESTIGATIONS ON THE PERSONALITY OF PATIENTS WITH PULMONARY CARCINOMAS COMPARED TO A CONTROL GROUP (MEETING ABSTRACT)

Blohmke M, Von Engelhardt B, Stelzer O
Institute of Social and Occupational Medicine, Im Neuenheimer Feld 368, D-6900 Heidelberg, W. Germany
Med Biol Environ; 9(1):67 1981

The objective of our study was to determine whether men suffering from lung cancer show a special psychosocial risk profile. Biographical questionnaires were presented to 888 male patients and later evaluated. All patients surveyed had not yet been informed on the nature of their condition at the time of the interview. Eight hundred and eighty-eight healthy persons served as control group. A standardization was first of all undertaken with regard to age and social class by formation of matched pairs. The results in smokers and nonsmokers are discussed here. The absolute and relative frequencies of the re-

sponses were checked for significant differences and a factor analysis was performed. Three factorts were extracted for each group. Now is was possible to observe that the smoking and nonsmoking cancer patients displayed very similar results in factor analysis. In the group of smokers we find some more differences between patients and control persons, also in the group of nonsmokers. (no Refs)

95. EPIDEMIOLOGY AND EARLY DETECTION OF CANCER OF THE ESOPHAGUS.

Sorouri P

900 Hillside Road, Wilmington, DE, 19807

Gastrointestinal Cancer 1. Decosse JJand Sherlock P, ed. The Hague, Martinus Nijhoff Publishers, Cancer Treatment and Research, Vol. 3, 452 pp., 1981.

The extraordinarily high incidence of esophageal cancer in Iran provides the data base for a review of the epidemiology and early detection of cancer of the esophagus. Cancer of the esophagus is discussed in relation to incidence, sex, age, and racial factors; etiology; and prevention. (153 Refs)

96. EPIDEMIOLOGY OF GASTRIC CANCER AND ITS PRECURSOR LESIONS.

Correa P

Louisiana State Univ. Medical Center, New Orleans, LA, 70112

Gastrointestinal Cancer 1. Decosse JJand Sherlock P, ed. The Hague, Martinus Nijhoff Publishers, Cancer Treatment and Research, Vol. 3, 452 pp., 1981.

Epidemiology of gastric cancer is reviewed with respect to etiology. Topics include geographic distribution, sex ratio, time trends, migrant studies, histopathology, blood groups, socioeconomic class, geochemistry, diet, and pernicious anemia. Historic aspects, histologic characteristics, distribution by sex and age, diet, and nitrate intake are considered in relation to precursor lesions of gastric cancer. (40 Refs)

97. METABOLIC EPIDEMIOLOGY OF LARGE BOWEL CANCER.

Hill MJ

Central Public Health Lab., Colindale Ave., London NW9, England

Gastrointestinal Cancer 1. Decosse JJand Sherlock P, ed. The Hague, Martinus Nijhoff Publishers, Cancer Treatment and Research, Vol. 3, 452 pp., 1981.

The epidemiology of large bowel cancer and predisposing and associated diseases are reviewed. Possible causative agents, evidence for the role of bile acids as co-carcinogens, and metabolic epidemiology vis results of studies of the histopathology of large bowel cancer and the adenoma-carcinoma sequence are considered. Variables examined in relation to the development of large bowel cancer include geography, sex, socioeconomic group, race, religion, population density, time and cultural environment. Predisposing diseases include adenomatosis coli, cancer family syndrome, and colorectal adenoma. Associated diseases include associated cancers, diseases of fiber depletion, and others. Possible causative agents are stress and physical factors, radiation, immunological factors, virological factors, environmental agents, endogenous agents (cholesterol, bile acids, steroid estrogens, tryptophan metabolites, tyrosine metabolism, and N-nitroso compounds), nutrition, and genetic factors. (154 Refs)

98. FURTHER STUDIES ON SKIN MELANOMAS APPARENTLY DEPENDENT ON FEMALE SEX HORMONES.

Lee JA, Storer BE

Sch. Public Health and Community Medicine, Dept. Epidemiology SC 36, Univ. Washington, Seattle, WA, 98195

Int J Epidemiol; 11(2):127-131 1982

In the British Isles the incidences and mortality rates from malignant melanoma of the skin have been shown to be higher in females than in males in the later years of reproductive life. In populations with higher rates for malignant melanoma of skin (Scandinavia, Australasia, etc), and also in Japan, where the rates are low, the ratio of female to male deaths is lower than in the British Isles. However, a similar pattern of age-specific sex ratios (risks for females compared with males peaking at some age in the latter half of reproductive life, and relatively low in middle age) is found in these populations. This 'gynecologic' factor is not an artifact of interactions between age and year of birth effects, and appears to act multiplicatively with other etiologic factors. These findings have implications for studies of the etiology and pathogenesis of malignant melanoma, as well as for the descriptive mathematical modelling of the rates for purposes of environmental legislation. (Author abstract) (22 Refs)

99. SOCIO-ECONOMIC CLASS DIFFERENCES IN CANCER INCIDENCE IN CALI, COLOMBIA.

Cuello C, Correa P, Haenszel W

Dept. Pathology, Faculty Medicine, Universidad del Valle Cali, Cali, Colombia

Int J Cancer; 29(6):637-643 1982

Based on census tract information, cancer incidence rates for three socioeconomic strata of the city of Cali, Colombia, were calculated. Strong negative associations with socioeconomic status were found for cancers of the cervix and stomach. Colon cancer and endocrine-related cancers were positively associated with socioeconomic status, while no such association was found for rectal cancer. Contrary to data from developed countries, all smoking-related cancers were positively associated with socioeconomic class. The role of socio-economic gradients in developing countries is stressed as a basis for etiological research. (Author abstract) (30 Refs)

100. TUBERCULOSIS AND LUNG CANCER RISK IN NONSMOKING WOMEN.

Hinds MW, Cohen HI, Kolonel LN

Epidemiology Program, Cancer Center of Hawaii, Univ. Hawaii, Suite 407B, 1236 Lauhala St., Honolulu, HI, 96813

Am Rev Respir Dis; 125(6):776-778 1982

We ascertained prior pulmonary tuberculosis infection in 211 non-Caucasian female lung cancer patients and 419 sex, race, age, smoking history and birthplace-matched control subjects by searching the Hawaii State Tuberculosis Branch patient records. Among never-smokers we found a significant increase in risk associated with prior tuberculous infection (odds ratio, 8.2; 95% confidence limits = 1.3 to 54.4). No such association was found among smokers. Prior tuberculous infection was identified in only 5.5% of never-smoking lung cancer patients, however, suggesting that this factor is a relatively unimportant contributor to the etiologic aspects of lung cancer in persons who have never smoked. (Author abstract) (26 Refs)

101. RELATIONSHIP OF SITE-SPECIFIC CANCER MORTALITY RATES TO ALTITUDE.

Amsel J, Waterbor JW, Oler J, Rosenwaike I, Marshall K
Sch. Medicine, Program Epidemiologic Res. and Training, Univ. Pennsylvania, Nursing Education Building, 420 Service Drive S2, Philadelphia, PA, 19104
Carcinogenesis; 3(5):461-465 1982

Mortality rates for all malignant neoplasms (combined) and for 34 site-specific cancer categories for selected high and low altitude populations are compared using two related techniques: confidence interval overlap for strictly descriptive purposes and analysis of standardized mortality ratios using lower and upper 95% statistical significance factors for the ratio of an observed value of a Poisson variable to its expectation. Techniques are employed to minimize confounding due to industrialization, urbanization or selected cultural characteristics. Cancer mortality data for US counties averaged over the 20-yr period, 1950-1969, were used. For most comparisons a deficit in cancer mortality in high altitude counties was observed. The largest differences between the low and high altitude groups were found for cancers of the tongue and mouth, esophagus, larynx, lung and melanoma. Some limitations of ecologic studies are discussed. (Author abstract) (18 Refs)

VIRAL FACTORS INVOLVING ENVIRONMENTAL AND OCCUPATIONAL EXPOSURE

102. SEX PARTNERS AND HERPES SIMPLEX VIRUS TYPE 2 IN THE EPIDEMIOLOGY OF CANCER OF THE CERVIX.

Graham S, Rawls W, Swanson M, McCurtis J
Dept. Social and Preventive Medicine, State Univ. New York at Buffalo, 2211 Main St., Buffalo, NY, 14214
Am J Epidemiol; 115(5):729-735 1982

The authors examined the interaction of exposure to various numbers of sex partners and evidence of antibodies to herpes simplex virus type 2 (HSV-2) in cervical neoplasia in 181 cases of cervical dysplasia, carcinoma in situ and cancer of the cervix and 130 control patients in Los Angeles County, California hospitals, in 1974-1979. Studies by the authors and other investigators have found that risk of cancer of the cervix was enhanced with numbers of sex partners, frequency and duration of using the vaginal douche, early age at first pregnancy, and antibodies to HSV-2 as measured by radioimmunoassay. In this study, it was found that for women with only one or no sex partner in their history, risk was elevated if evidence of antibodies to HSV-2 were present. The same was true for women with two or more sex partners. The risk associated with two or more sex partners was not higher than that for women with one sex partner among those positive for HSV-2, and among those negative for HSV-2. Thus, although this inquiry needs replication on larger numbers of women, whatever the other microorganisms of carcinogens patients were exposed to with multiple sex partners, there was no apparent effect beyond the fact the HSV-2 raises the risk of cancer of the cervix. This may strengthen credence in the hypothesis that HSV-2 is an etiologic factor in cervical cancer. (Author abstract) (12 Refs)

103. PERSISTENT, GENERALIZED LYMPHADENOPATHY AMONG HOMOSEXUAL MALES.

Mildvan D, Mathur U, Enlow R, Gold J, Sears C, Wong B, Brown AE, Henry S, Safai B, Arlin Z, Moore A, Metroka C, William DC, Siegal F, Brown J, Wallace J, Spencer D, Friedman SM, Felman YM, Rothenberg R, Sikes RK, Owen W, Dritz JS, Rendon C, Chin J, Sonnabend J, Israel E
(c/o Israel), Public Health Service, Centers for Disease Control, Atlanta, GA, 30333
MMWR; 31(19):249-251 1982

Records are reviewed of 57 homosexual men with lymphadenopathy seen at various medical centers. There are many causes of generalized lymphadenopathy, including viral infections and cancer (including leukemia and lymphoma). The unexplained syndrome is of concern because of current reports of Kaposi's sarcoma (KS) and opportunistic infections (OI) primarily in homosexual males. The epidemiological characteristics of the 57 reported cases are similar to those of the homosexual KS/OI. (6 Refs)

104. VIRAL HEPATITIS. 1981 INTERNATIONAL SYMPOSIUM.

Szmuness W, Alter HJ, Maynard JE
Lab. Epidemiology, Lindsley F. Kimball Res. Inst., New York Blood Center, New York, NY
Viral Hepatitis. 1981 International Symposium. Philadelphia, The Franklin Institute Press, 843 pp., 1982.

Previously unpublished reports concerning viral hepatitis were presented and discussed. Topics ranged from molecular biology to vaccine development, from hepatitis virus culture to the treatment of clinical disease, from hepatoma in the woodchuck to the association of hepatitis B virus (HBV) infection with hepatocellular carcinoma in man. New insights into the molecular anatomy of hepatitis A and B viruses were presented and the in vitro propagation of whole virus or virus-related proteins was described. DNA viruses termed 'hepadna' include human HBV and related viruses found in the woodchuck, ground squirrel, and Pekin duck. The high occurrence of hepatocellular carcinoma among animals infected with HBV-like viruses provided strong virologic support for the epidemiologic data that suggests a causal relationship between HBV infection and the development of human hepatocellular carcinoma. The epidemiology, diagnosis, pathogenesis, and chronic sequelae of hepatitis B and the evolving clinical spectrum of non-A, non-B hepatitis were discussed. Passive and active immunization programs in Australia, Japan, England, Holland, Senegal, and the United States were reported. Overall, the subunit vaccine was safe, highly immunogenic, and almost completely protective among persons who responded with development of anti-surface antibody. Abstracts and summaries of 14 workshops are presented. Unresolved issues included measures to prevent intrahospital transmission of HBV, reduction of posttransfusion hepatitis, use of corticosteroids for treatment of chronic hepatitis, and the use of hepatitis B immunoglobulin in the prevention of type B hepatitis. (1302 Refs)

105. KAPOSI'S SARCOMA - AN EMERGING EPIDEMIC.

Mansell PW
Div. Cancer Prevention, M. D. Anderson Hosp. and Tumor Inst., Houston, TX
Cancer Bull; 34(2):72-74 1982

The pathobiology of Kaposi's sarcoma and the recent outbreak of the disease (greater than 200 cases) that has occurred among young male homosexuals are described. Kaposi's sarcoma may be associated with the DNA virus cytomegalovirus. It

is also associated with immunosuppression and is a frequent second primary among cancer patients. The recent outbreak appears to be spreading from New York City, where 55% of the cases have originated. The population at risk (24-40 yr old) falls in age between that typical of American and European patients (60-70 yr) and that of African patients (less than 20 yr). All patients thus far examined have had anti-hepatitis B antibody or hepatitis B surface antigen, as well as anticytomegalovirus antibody titers. Cytomegalovirus has been cultured from tumor tissue in several cases. All patients in the outbreak have so far been immunosuppressed. The immunological defect appears to be progressive and long-lasting. All patients have had a history of sexually transmitted diseases, some with multiple manifestations such as hepatitis, genital herpes, gonorrhea, and condyloma. Mortality has been exceptionally high, with death occurring in a high percentage of patients within 20 mo, subsequent to unsuccessful combination chemotherapy with doxorubicin, bleomycin, Velban, and dacarbazine. Possible etiologic factors contributing to this outbreak and to malignant transformation in general are discussed. (23 Refs)

POTENTIAL CARCINOGENIC FACTORS RELATED TO MEDICAL TREATMENT

106. COMPLICATIONS OF TREATMENT OF HODGKIN'S DISEASE IN CHILDREN.

Donaldson SS, Kaplan HS
Dept. Radiology, Stanford Univ. Medical Center, Stanford, CA, 94305
Cancer Treat Rep; 66(4):977-989 1982

An analysis of complications of therapy requires long-term and frequent followup. Reported here is a review of 179 consecutive children with Hodgkin's disease from Stanford University Medical Center who were seen, treated, and followed over a 20-yr period. Complications of treatment are related to the extent of disease and the aggressiveness of therapy. Severe complications from radiotherapy are associated with high-dose, extended-field treatment in preadolescent children. Severe chemotherapy-associated complications include immunosuppression, sterility, and secondary oncogenesis. As cure rates are increasingly optimistic among children with Hodgkin's disease, successful treatment with minimal morbidity remains our greatest challenge. Therapy programs require continual refinement utilizing assessment of short- and long-term side effects of treatment. (Author abstract) (26 Refs)

107. LATE SIDE EFFECTS OF CHEMOTHERAPY IN OVARIAN CARCINOMA. A CYTOGENETIC, HEMATOLOGIC, AND STATISTICAL STUDY.

Einhorn N, Eklund G, Franzen S, Lambert B, Lindsten J, Soderhall S
Dept. Gynecological Oncology, Radiumhemmet Karolinska Hosp., S-104 01 Stockholm, Sweden
Cancer; 49(11):2234-2241 1982

Late side effects of chemotherapy were studied in 51 women who had received at least 300 mg of melphalan for ovarian cancer and had survived for at least 3 yr. Hematologic, statistical, and cytogenetic methods were employed. Six cases of iatrogenic leukemia were found. They appeared to represent a hematologic entity that is fairly difficult to recognize. The risk of iatrogenic leukemia in women who survived for 3 yr or more after melphalan treatment was calculated to be 950 times greater than the leukemia risk in the total female population. The cytogenetic changes were studied with three methods focused on sister chromatid exchange, chromosome aberrations, and DNA damage. The sister chromatid exchange frequency showed a marked increase, but it was corrected within a few mo. Chromosome aberrations expressed by chromosome rearrangements were increased in the peripheral lymphocytes and may persist for several yr. The frequency of DNA strand breaks was decreased indicating the presence of DNA crosslinks. Any of these types of genetic alteration could be the initiating event in carcinogenesis. (Author abstract) (31 Refs)

108. SCREENING PROGRAMMES - ARE THEY WORTHWHILE? (MEETING ABSTRACT)

Luke H, Sacharias N
No affiliation given
Breast Cancer Symposium, May 29-30, 1981, Melbourne, Australia Monash University; 1981

Carcinoma of the breast is the leading cause of death between the ages of 35 and 50. The National Health and Medical Research Council (NHMRC) has laid down guidelines for screening for breast cancer, they recommend that screening be available to women over 50. They based their information largely on Mammography techniques published prior to 1970 at which stage only 19% of all cancers detected were in women under 50 and only 3.5% of tumors were under 1 cm in diameter, none of which were found by mammography. Any screening program raises the possibility of radiation induced cancer. The cost benefit of radiation hazard versus possible pick-up will be discussed together with a program whereby the high risk group patients are selected. Recent evidence suggests that the NHMRC recommendations are no longer valid in relation to age limitations, and that the radiation hazard has been overstated - there being no evidence that neoplastic changes have been induced by mammography employing less than 1 rad per examination. (no Refs)

109. SECOND MALIGNANT NEOPLASMS IN PATIENTS SUCCESSFULLY TREATED FOR HODGKIN'S DISEASE: A CANCER AND LEUKEMIA GROUP B STUDY.

Glicksman AS, Pajak TF, Gottlieb A, Nissen N, Stutzman L, Cooper MR
Dept. Radiation Oncology, Rhode Island Hosp., Providence, RI, 02902
Cancer Treat Rep; 66(4):1035-1044 1982

The recent analyses by the Cancer and Leukemia Group B (CALGB) of patients with advanced Hodgkin's disease entered in CALGB treatment protocols between 1966 and 1974 have substantiated the recognized high susceptibility of these patients to second malignant neoplasm. Protocols 6604, 6712, 6951, and 7251 included radiation therapy and/or chemotherapy with alkylating agents such as mechlorethamine and chlorambucil or nitrosoureas, vinca alkaloids, and procarbazine as induction agents, plus or minus maintenance therapy with vinblastine, or chlorambucil or a repetition of the induction program. The risk of a second malignant neoplasm attributable to each component of curative treatment was analyzed: 798 of 1332 evaluable patients achieved complete remission, with a mean followup of 46 mo. For 27 of these 798 patients, development of a second malignant neoplasm terminated the complete response. Ten patients developed acute myeloid leukemia (AML). For AML, induction chemotherapy with a mechlorethamine-containing regimen, followed by chlorambucil maintenance therapy, had the highest relative risk ratio and lifetable estimate. Mechlorethamine without chlorambucil maintenance was not a significant hazard, but chlorambucil without mechlorethamine was associated with a relative risk ratio of

234 and a life-table estimate of 9%. Radiotherapy was not a significant hazard when added to the chemotherapy regimens. For the non-AML second malignant neoplasms, none of the chemotherapy regimens was a greater risk than the others, with a relative risk of 2.8. The addition of radiotherapy significantly increased the incidence of such neoplasms. Patients of all ages had a significant risk of AML but not of the other second malignant neoplasms; however, because of the increasing rate of second malignant neoplasms with the intervening years, the full extent of the risk may not be appreciated for another decade. (13 Refs)

110. BREAST IRRADIATION AND FUTURE RISK, EG CARCINOGENESIS (MEETING ABSTRACT)

Levitt SH
Department of Therapeutic Radiology, University of Minnesota Hospitals, Minneapolis, MN
Seventeenth Annual San Francisco Cancer Symposium, February 27-28, San Francisco, California West Coast Cancer Foundation; 1982

A major concern for physicians treating breast cancer patients with conservation surgery and radiation therapy is the possibility of the development of an increased incidence of second cancer in the contralateral breast and the treated breast. An analysis of the epidemiologic data related to the development of breast cancer was carried out, and the relative risks related to the dose of irradiation, the type of irradiation, the intent of the irradiation, and the age of the patient will be discussed. In addition, the clinical studies with the largest number of patients treated with radiation following breast cancer surgery with minimal and radical intent were reviewed. Based on these studies, the extent of risk of developing a second primary in the homolateral or contralateral breast is found to be minimal and not of such consequence that it would contraindicate the use of conservation surgery and radiation in the treatment of breast cancer. (no Refs)

111. LONG TERM FOLLOW-UP OF PEDIATRIC ONCOLOGY PATIENTS--RADIOTHERAPY (MEETING ABSTRACT)

D'Angio GJ
Children's Hospital Cancer Research Center, Philadelphia, PA, 19104
1981 Annual Childhood Cancer Treatment Seminar, November 19-21, 1981, Clearwater Beach, Florida Florida Association of Pediatric Tumor Programs, Inc; 1981

Long ago, Bergonie and Tribondeau, two French investigators, proposed a general principle. This states that the more rapidly growing the cell, and the more undifferentiated it is, the more pronounced the radiation effect dose-for-dose. This holds true as a general rule. Clearly then, irradiation effects in any body structure can be expected to be more pronounced in children than in adults because virtually all organs and tissues are growing rapidly and differentiating. It also follows that the effects are inversely proportional to the age at the time of irradiation, while being directly related to the dose delivered. These late effects can be divided into two categories: (1) functional effects, and (2) oncogenesis. Crippling if not lethal functional impairments can result from the irradiation of vital organs such as the lungs, liver, and kidneys. Nonetheless, some of the major concerns of parents lie not so much with those organs, where the changes may be subtle and slow in developing, but rather with such overt manifestations as failure to grow and develop normally in stature, in intellectual capacity, and in gonadal function. Second malignant neoplasms developing after irradiation also are a spectre that must be confronted by the physicians planning the treatment of the child with cancer. While benign tumors, notably the osteochondroma, are known to follow irradiation, it is bone and soft tissue sarcomas that pose the greatest threat. It has been estimated that 2 to 5% of long-term survivors of childhood cancer will develop a second malignant neoplasm. Most of these second cancers are very aggressive and extremely difficult to control. The increasing use of combined modality therapy, coupling one or more chemotherapeutic agents with radiation, complicates analyses of post-irradiation complications in surviving children. (no Refs)

112. METHYLDOPA AND BILIARY CARCINOMA: AN INTERNATIONAL STUDY OF SECULAR TRENDS (MEETING ABSTRACT)

Strom BL, Hibberd PL, Stolley PD
Department of Medicine, University of Pennsylvania School of Medicine, Philadelphia, PA
Clin Pharmacol Ther; 31(2):223 1982

An association between methyldopa and biliary carcinoma was reported recently, but errors in study design make the result difficult to interpret. We have reexamined this possible association. Incidence or mortality rates of biliary carcinoma were obtained from 18 cancer registries throughout the world, both before and after methyldopa was marketed. Methyldopa sales were obtained from both its manufacturer and a commercial prescription audit. For each registry, sex-specific age-adjusted rates of biliary carcinoma were correlated with methyldopa sales, over time. In each year, methyldopa sales were correlated with sex-specific age-adjusted rates of biliary carcinoma obtained from each registry to study international trends, Both a 3-and 10-yr lag period was used in all analyses. No trends were observed in rates of biliary carcinoma, except in national mortality data obtained from Japan. No significant association between cancer rates and sales were discovered over time in 17 of 18 registries, again except in Japan. We did not observe any international trends. Further examination of the Japanese data showed that the association between sales and cancer rates persisted for all lag periods between 3 and 12 yr and for all subcategories of biliary carcinoma. (no Refs)

113. NORMAL SISTER CHROMATID EXCHANGE FREQUENCY IN LONG-TERM SURVIVORS WITH ACUTE LEUKEMIA.

Inoue S, Brown L, Ravindranath Y, Ottenbreit MJ
Children's Hosp. Michigan, Detroit, MI, 48201
Cancer Res; 42(7):2906-2908 1982

We hypothesized that the sister chromatid exchanges assay in acute leukemia long-term survivors may detect: (a) long-term effects of combined chemo- and radiotherapy; and possibly (b) those individuals with inherently deficient DNA repair. Accordingly, we determined the sister chromatid exchanges frequency in 26 blood specimens from 24 acute leukemia long-term survivors (patients) and 14 blood specimens from 13 control subjects (controls). The patients consisted of 23 children with acute lymphocytic and one child with acute myelocytic leukemia. The median length of chemotherapy was 5 years. Eighteen of the 24 patients also received prophylactic fractional central nervous system irradiation for the first 3 years of treatment, and one patient received therapeutic irradiation to the central nervous system. The median off-therapy period at the time of study was 2.5 years with a range of 0 to 7.5 years. The controls consisted of the parents of the patients and laboratory personnel. A mean exchange score per cell was established for each specimen (25 to 30 cells/specimen were scored), and it ranged from 3.0 to 9.7 in the patients and from

3.0 to 11.5 in the controls. A mean +- S.D. calculated from those means was 6.0 +-1.8 for the patients and 6.9 +-2.8 for the controls. They were not significantly different. We conclude that chemo- and radiotherapy produced no persistent DNA alterations detectable by this method. (Author abstract) (20 Refs)

PUBLIC POLICY INVOLVING ENVIRONMENTAL AND OCCUPATIONAL CARCINOGENS

114. INTERACTION OF SAFETY EVALUATION AND GOVERNMENT REGULATIONS (MEETING ABSTRACT)

Kolbye AC
Food and Drug Administration, Washington, DC, 20204
International Conference on Safety Evaluation and Regulation, of Chemicals, February 24-26, 1982, Boston, Massachusetts Bio-Research Institute; 1982

Dr Kolbye will discuss the shortcomings of short-term tests, the problems in defining relevant endpoints for both carcinogenesis and heritable genetic damage and will provide a perspective for the societal needs for improvements in food safety legislation and regulatory practice. Dr Kolbye speaks from the viewpoint of both medicine and law with over 12 years experience in FDA and over 20 years experience with the US government. (no Refs)

115. RADIATION PROTECTION IN PEDIATRIC RADIOLOGY. RECOMMENDATIONS OF THE NATIONAL COUNCIL ON RADIATION PROTECTION AND MEASUREMENTS.

National Council on Radiation Protection and Measurements
Woodmont Ave., Washington, DC, 20014
NCRP Rep. Issue 68, 138 pp., 1981.

General concepts of reduction of exposure to medical radiation in children, gonadal protection, protection of personnel and parents, immobilization of children, equipment consideration in pediatric radiology, and special problems of mobile equipment are discussed. Objectives of radiation protection, tissues at risk, common sense consideration of risk, difference between adults and children, and max permissible dose equivalent are reviewed. General concepts of radiation exposure reduction include training of personnel, adequate examination rooms, means of minimizing radiation exposure from examinations, minimizing the need for repeat examinations, diminution of radiation dose in radiography, diminishing fluoroscopic dose, minimizing radiation outside the area examined, and to ascertain the possibility of pregnancy. Means of gonadal protection are presented. Immobilization of patients, shielding, fluoroscope design and radiation to personnel, eye protection, monitoring dose, and pregnant personnel are included into radiation protection. Methods of immobilization of children are discussed. Equipment consideration in pediatric radiology include radiographic units, imaging systems, grids, processing, fluoroscopic equipment, cineradiography, computed tomography, and dental radiography. Radiography in operating rooms and mobile fluoroscopy are discussed. Doses from various examinations in pediatric radiology and a method for estimating selected organ doses for projections commonly used in pediatric radiology are presented. (126 Refs)

116. RADIATION PROTECTION: THE NCRP GUIDELINES AND SOME CONSIDERATIONS FOR THE FUTURE.

Sinclair WK
National Council on Radiation Protection and Measurements, 7910 Woodmont Ave., Washington, DC, 20014
Yale J Biol Med; 54(6):471-484 1981

The National Council on Radiation Protection and Measurements (NCRP) in the USA and the International Commission on Radiological Protection (ICRP), worldwide, were formed about 1928 and have since made recommendations on appropriate levels of protection from ionizing radiation for workers and for the public. These recommendations and much of the guidance provided by these organizations have usually been adopted by regulatory bodies around the world. In the case of the NCRP, the levels have fallen from 0.1 roentgen per day in 1934 to the current 5 rem per year (a factor of about 5). The present levels recommended by both the ICRP and the NCRP correspond to reasonable levels of risk where the risks of harm from ionizing radiation are compared with the hazards of other, commonly regarded as safe, industries. Some considerations for the future in radiation protection include trends in exposure levels (generally downward for the average exposure to workers) and the improvements in risk estimation; questions of lifetime limits, de minimis levels, and partial body exposures; plus problems of high LET radiations, acceptability of risk, synergisms, and risk systems for protection. (Author abstract) (25 Refs)

117. X-RAY MEASUREMENTS AND PROTECTION, 1913-1964: THE ROLE OF THE NATIONAL BUREAU OF STANDARDS AND THE NATIONAL RADIOLOGICAL ORGANIZATIONS.

Taylor LS
National Bureau of Standards, Washington, DC
X-Ray Measurements and Protection, 1913-1964: The Role of the National Bureau of Standards and the National Radiological Organizations. Available from National Technical Information Service, Springfield, VA, as PB82-165036:, 390 pp., 1981.

An account of the initial US concerns with, and subsequent efforts to cope with, the safe use of ionizing radiation is given. National interest was focused in the National Bureau of Standards where radiation programs were established at the urging of, and with the close cooperation of, the radiological profession. The National Bureau of Standards' ionizing radiation research programs, the first in the US Government, were dedicated to establishing a sound scientific base for x-ray measurement and protection. Along with the support and constant efforts of the national and international radiological organizations, the Bureau played a critically important role in the Nation's ability to use radiation effectively and safely. Based on widely scattered files assembled from both Government and nongovernment sources, this document represents a single source record of significant committee papers, correspondence, and decisions during the period 1913 to 1964, along with the author's summary of National Bureau of Standards' work, and the interrelated efforts of many others in the scientific community. A complete listing of the published output of the National Bureau of Standards' radiation staff is also included in this document. These papers contribute significantly to our understanding of ionizing radiation. (Author abstract)

118. IMPLEMENTING GUIDELINES FOR SAFE HANDLING AND DISPOSAL OF ANTINEOPLASTIC AGENTS IN A GENERAL HOSPITAL (MEETING ABSTRACT)

Beck SL
St. Francis General Hospital, Pittsburgh, PA, 15201
The Seventh Annual Congress of the Oncology Nursing Society, April 23-25, 1982, St. Louis, Missouri. Oncology Nursing Society 99 pp., 1982.

Growing concern over a potential occupational hazard to hospital personnel exposed to antineoplastic drugs spurred the development of guidelines for handling and disposal of these agents in a large general hospital. The guidelines require the use of gloves and masks by the nurses involved in mixing the drugs. Specially designated biohazard bags are used to confine the waste which is then incinerated. The extensive interdisciplinary collaboration required to establish these guidelines will certainly continue as implementation ensues. New questions surface daily: 'Who will transport the waste?' 'How do we implement this on non-oncology units?' What about air-borne contamination of other personnel?' A plan whereby the drugs will be mixed by pharmacy under a vertical laminar hood has been recommended. Until this is realized, meeting the challenge of implementing these guidelines will minimize possible occupational hazard. (no Refs)

ANALYTICAL AND METHODOLOGICAL ASPECTS OF CANCER EPIDEMIOLOGY

119. USE OF WEIBULL MODEL TO DETECT AND QUANTIFY OCCUPATIONAL CANCERS (MEETING ABSTRACT)

Swartz J, Riddiough C, Epstein SS
University of Illinois School of Public Health, Chicago, IL
109th Annual Meeting of the American Public Health Association, November 1-5, 1981, Los Angeles, California. American Public Health Association 390 pp., 1981.

A crucial public health endeavor is the detection of occupational cancer rates through the use of mortality records. The procedure normally used involves calculating standard mortality rates for exposed workers, and comparing these to those of the general population or a control. This technique involves numerous groups, the most frequent of which is proper treatment of the latent period. Improper treatment of the latent period often leads to gross underestimation of the cancer risk to the exposed population. A mathematical procedure is presented for use of the Weibull model of carcinogenesis to make a more accurate estimate of the effects of occupational exposure to carcinogens. The procedure explicitly takes into account variation in latent periods, the effect of cessation of exposure, and age at initial exposure. It is expected that this procedure will be more sensitive in detecting excess cancers, provide more accurate estimates of the effects of exposure, and reduce the possibility of misplanning a study so excess cancers are not detected. (no Refs)

120. LARGE COMPUTER OR DECENTRALIZED SMALL COMPUTER (MEETING ABSTRACT).

Gruenagel HH
Evangelisches Kr. Haus, Dusseldorf, W. Germany
Ninety-eighth Congress of the German Society for Surgery, April 22-25, 1981, Munich, W Germany Deutsche Gesellschaft fur Chirurgie; :A44 1981

Large computers are indispensable to the overlying considerations of an epidemiologic nature. However, highly decentralized hard- and software is needed locally for creativity. Since problems involving medical data processing are somewhat common to all of the hospitals throughout West Germany, a user association is projected for surgery departments and clinics with possible openings for additional clinical specialties. This adopts tested programs which vary individually with respect to questions of emphasis and exceptions. Essentially 2 variations are possible: a 2d disk unit hooked up to the administrative computer with remote transmission of data to larger centers after removing the patients names or computer coupling to the administrative computer. With these variations the postdischarge area can be monitored, medical record efficiency increased, consultation hr, accounting procedures, and diagnostic coding conducted with ease. The tumor follow-up information circuit: head office-patient-family physician-hospital-head office is disentangled thanks to this system. The development of machine-based support programs at the Dusseldorf Evangelical Hospital is being assisted by a research project of the Federal Ministry of Youth, Family, and Health for interdisciplinary comprehensive care. (no Refs) (In GER)

121. CRRIS: A COMPUTERIZED RADIOLOGICAL RISK-INVESTIGATION SYSTEM.

Baes CF, Miller CW
Oak Ridge Natl. Lab., Oak Ridge, TN
CRRIS: A Computerized Radiological Risk-Investigation System. Available from National Technical Information Service, Springfield, VA, as DE82000136:, 11 pp., 1981.

The US Environmental Protection Agency (EPA) is responsible for regulating radioactive airborne effluents in the US. A comprehensive, integrated Computerized Radiological Risk Investigation System (CRRIS) is being developed to support EPA's radiation standards development. This modular system consists primarily of five computer codes and their supporting data bases for estimating environmental transport and radiation doses and risks. Health effects are estimated on the basis of a life-table methodology developed by EPA. CRRIS is designed to provide EPA with a reasonable and flexible way of assessing the risk to man associated with radionuclide releases to the atmosphere. (Author abstract)

122. RADIOBIOLOGY OF RISK ESTIMATES IN MEDICAL IRRADIATION (MEETING ABSTRACT)

Rossi HH
Columbia University, New York, NY
IN: 148th National Meeting of the American Association for the Advancement of Science, January 3-8, 1982, Washington, D.C American Association for the Advancement of Science 182 pp., 1982.

Intensive efforts to determine the effects of ionizing radiation on human health have yielded approximate information on cancer and genetic hazards for doses that are of the order of 1 Gy (100 rad). Although there are important data for considerable numbers of Japanese A-bomb survivors exposed to somewhat lower doses, the magnitudes of these doses (as well as the nature of the radiation involved) are currently uncertain. Esti-

mates of the risk attendant to procedures in diagnostic radiology must therefore be based on extrapolations to doses that are at least one, and more typically two or three, orders of magnitude lower than those for which we have reasonably reliable knowledge. The radiobiological considerations that may serve as a guide for such extrapolations will be critically reviewed. (no Refs)

123. DOSIMETRY AND RISK ESTIMATES IN THE DIAGNOSTIC MEDICAL FIELD (MEETING ABSTRACT)

Lansl LH

Rush-Presbyterian-St. Luke's Medical Center, Chicago, IL, 60612

148th National Meeting of the American Association for the Advancement of Science, January 3-8, 1982, Washington, D.C. American Association for the Advancement of Science 182 pp., 1982.

One of the many risks in medical diagnostic radiation procedures is the risk from the radiation itself. The starting point for estimates of this risk is the determination of the radiation dose either to the whole patient or to a given organ of the patient depending upon the biological end point under study. If the end point is lung cancer, the organ is the lungs; if it is leukemia, the organ is the hematopoietic system; etc. The evaluation of radiation risks has been based on scanty data, many of which are not based on controlled scientific experiments. For example, one important source of medical data is the wartime irradiation of people at Hiroshima and Nagasaki. Although these irradiations occurred in 1945, the retrospective evaluation of dose to individual survivors has periodically undergone redetermination, the latest of which is still under way. In recent years, there has been a concerted effort to improve the accuracy of dose determinations in diagnostic procedures. In many procedures there are several parameters which can be varied, and each can affect the dose to the patient. In mammography the radiation dose to the skin for optimal images can vary by a factor of 20 depending on whether a molybdenum or tungsten target is used in the x-ray tube. A technic for quantifying risk is the development of an appropriate mathematical model. (no Refs)

124. THE ROLE OF A-BOMB SURVIVOR STUDIES (MEETING ABSTRACT)

Land CE

National Cancer Institute, Bethesda, MD

148th National Meeting of the American Association for the Advancement of Science, January 3-8, 1982, Washington, D.C. American Association for the Advancement of Science 182 pp., 1982.

The estimated risk of radiation-induced cancer from medical diagnostic radiation procedures, which are in general given at low radiation doses, is derived from observations on populations with histories of high-dose exposures. These populations include patients given radiation therapy or exposed to high-dose diagnostic radiation, groups with higher-level occupational exposures, and the survivors of the atomic bombs dropped on Hiroshima and Nagasaki. Consistency among estimates obtained from different populations is the most important single criterion for reliability of these estimates. Currently, there are questions about the estimates based on the most important data source, the A-Bomb survivor studies, because of uncertainties about the dosimetry currently in use for these studies. The implications of these uncertainties for risk estimation are discussed. (no Refs)

125. CANCER CONTROL NEEDS ASSESSMENT METHODOLOGY: A SURVEY OF FORMER ASBESTOS WORKERS (MEETING ABSTRACT)

Fournier-Massey G, Wong G, Hall TC, King PH

University of Hawaii, Honolulu, HI, 96813

1982 ACCC/Progress in Cancer Control III Clinical Sessions, March 4-7, 1982, Washington DC Association of Community Cancer Centers; AB-3 1982

A survey was conducted by the Community Cancer Program of Hawaii (CCPH) of 411 former asbestos workers. Goals were to identify the workers and interview them to assess their personal and environmental pollution history, health status, and to determine unmet cancer control needs and the feasibility of specific programs to fulfill these needs. A related goal was to identify and trace physicians likely to deal with asbestos-related problems, discern whether specific diagnostic and therapeutic capabilities were present, and if not, provide programs. Discussed is the methodology of planning and conducting the survey on a multi-occupational population in a multiethnic community. The Epidemiology program of the Cancer Center of Hawaii provided subjects' names from their ongoing study of a cohort of 1320 former asbestos workers, ages 45 and above, from the Pearl Harbor Naval Shipyard. Other subjects were selected from the local International Longshoremen's and Warehousemen's Union (ILWU), and Boilermaker's Union. Subjects were traced by letter and telephone call; those willing to participate were interviewed in person using a structured questionnaire. Questionnaire categories included demographics, exposure to asbestos, smoking history, personal and family medical history, current medical status, current medical care and coverage. (no Refs)

126. DEVELOPMENT OF AN INTERACTIVE INTERSTATE COMMUNITY HOSPITAL BASED REGIONAL TUMOR REGISTRY (MEETING ABSTRACT)

Stellman JM, Caravanos J, Taub RN

Columbia University Comprehensive Cancer Center, New York, NY, 10032

1982 ACCC/Progress in Cancer Control III Clinical Sessions, 8th National Meeting, March 4-7, 1982, Washington, DC Association of Community Cancer Centers; :AA-4 1982

The Columbia Presbyterian Medical Center, its affiliated hospitals and several community hospitals in Columbia's cachement area, in compliance with state laws and professional certification requirements, have established a Regionalized Tumor Registry Network. Features of the Network include a uniform computerized data collection system, a mutually agreed upon data form, and an automated system for patient survival and follow-up has also been established. Quality control and file maintenance procedures, as well as provisions for confidentiality of the data, are coordinated by the Columbia Cancer Control staff in conjunction with the tumor registrars and other professionals at the participating institutions. During its first six months of operation, the Network has entered more than 5,000 patients into the system and generated both individual and inter-institutional statistical data on primary sites, staging, survival and other demographic and clinical data. Member hospitals service a spectrum of patients including Blacks, Hispanics, Asians and other ethnic groups in the lower, middle and upper classes. Thus, the Regional Network is generating potentially useful demographic and other data on a community hospital level, providing previously unanalyzed cancer incidence and survival data to health planners and clinicians, and establishing a data base for hospital-based epidemiological studies. (no Refs)

127. METHODS AND RESULTS OF STUDIES ON ENVIRONMENTAL MUTAGENESIS IN MAN (MEETING ABSTRACT)

Lindsten J
Department of Clinical Genetics, Karolinska Hospital Stockholm, Stockholm, Sweden
Med Biol Environ; 9(1):83 1981

In this paper we have touched upon some of the problems involved in the evaluation of induced genetic damage in man. Even if considerable progress has been made within this field of research during recent years there remain a number of important questions to be answered. What is the biomedical significance of the finding of an increased frequency of chromosome breaks or sister chromatid exchange? To which extent can experimental data be extrapolated to the in vivo situation? Is the fetus at a greater risk than the adult? Are there risk individuals and how can they be identified? What will be the long-term evolutionary effect of an increased exposure to mutgens? Genetic damage in somatic cells might lead to cancer but will only be of evolutionary significance if it prevents individuals with a certain genotype from reproducing normally, ie if it implies a change in selection. A low mutability and resistance to mutagens might then be selected for. Many mutations induced in germ-line cells will manifest themselves as for instance abortions or severely malformed children and will therefore be genetically lethal. (no Refs)

128. 'RISK FACTORS IN CANCER' (MEETING ABSTRACT)

Weiss NS
Department of Epidemiology, School of Public Health and Community Medicine, University of Washington, Seattle, WA
Fifth Annual Snohomish County Cancer Conference, February 11, 1982, Everett, Washington Snohomish County Medical Education Board; 1982

Cancer epidemiology is the study of the variation in cancer occurrence, and the reasons for that variation. This paper will outline the knowledge of cancer epidemiology in clinical practice, the research strategies in the conduct of cancer epidemiology, and the means by which epidemiologic studies contribute to cancer etiology and cancer prevention, including the generation of clues for further research, the testing of hypotheses raised by other disciplines, and providing information for clinical and public health decisions. (no Refs)

GENERAL AND MISCELLANEOUS FACTORS

129. HOST AND ENVIRONMENTAL FACTORS ENHANCING CARCINOGENESIS IN THE RESPIRATORY TRACT.

Nettesheim P, Topping DC, Jamasbi R
Natl. Inst. Environmental Health Sciences, Research Triangle Park, NC, 27709
Annu Rev Pharmacol Toxicol; 21:133-163 1981

Selected laboratory studies conducted during the last decade that exemplify what has been learned about the multicomponent etiology of lung cancer are reviewed. Sections concerning experiments relating to modification of host susceptibility include the following: studies on age specific susceptibility of respiratory tract epithelium to carcinogens, effect of immune suppression on the development of respiratory tract tumors, role of dietary vitamin A in the susceptibility to lung cancer induction, and role of respiratory tract infections in the pathogenesis of lung cancer. Sections concerning the interaction of environmental or occupational agents include: two stage carcinogenesis in respiratory tract epithelium, cocarcinogenic effects of chrysotile asbestos, role of so-called inert particles in respiratory tract carcinogenesis, nickel subsulfide as a possible cocarcinogen in occupational lung cancer, studies on benzo(e)pyrene as a cocarcinogen, and role of irritant gases and vapors as cocarcinogens in the respiratory tract. (117 Refs)

130. CANCER CAUSING CHEMICALS.

Sax NI, Weisburger EK, Schottenfeld D, Haas J, Feiner B, Castelman BI, Lewis RJ
No affiliation given
Cancer Causing Chemicals. New York, Van Nostrand Reinhold Company, 466 pp., 1981.

Chemical carcinogenesis and its relevance for the general population, carcinogens in the workplace, control of workplace carcinogens, and regulations affecting use of carcinogens are discussed. Approx 25,000 synonyms and cross references to each of the 2,400 basic carcinogens (BC) are listed, described and discussed. Carcinogenicity of each of the BC is rated as 'conclusive', 'suggestive', or 'indeterminate' based upon literature research against criteria applied to this data by means of computer. Smoking, radiation, location or geographic location, drug use, congenital and genetic diseases, congenital defects, familial susceptibility, other diseases increasing the risk of developing neoplastic diseases, precancerous conditions, acquired diseases, and life-style are responsible for much of the general cancer incidence. Principles of non-human testing for chemical carcinogenicity are discussed with respect to the relevance of animal and in vitro studies for predicting human risks. Current concepts of prevention and control of occupational cancers are presented. Process, plant, and equipment design; exhaust ventilation; respiratory protection; protective clothing and personal hygiene; monitoring; and specific control techniques are included in the control of workplace carcinogens. Products and wastes containing carcinogens should be appropriately packed, labeled, and disposed of. The use of recognized carcinogens should be fully justified in terms of their need in society and available alternatives. (312 Refs)

131. CANCER: A COMPREHENSIVE TREATISE. VOLUME 1. ETIOLOGY: CHEMICAL AND PHYSICAL CARCINOGENESIS. SECOND EDITION.

Becker FF
Univ. Texas System Cancer Center, M.D. Anderson Hosp. and Tumor Inst., Houston, TX
Cancer: A Comprehensive Treatise. Volume 1. Etiology: Chemical and Physical Carcinogenesis. Second Edition. New York, Plenum Press, 714 pp., 1982.

In order to eradicate cancer, carcinogenic agents must be identified and their mechanism of action, understood. Crucial interactions between these carcinogens and important macromolecules within the cell must be identified, and those which relate to carcinogenesis must be distinguished from those which are extraneous. The alterations of cell function induced by these reactions must be examined so that phenotypic variation may be understood and an explantation provided for why malignant cells escape from normal homeostatic control. Malignancy must be defined so that the characteristics of cellular activity that permit the malignant cell to compete so effectively with the normal constituent can be defined. The goals of cancer research in general and of the present text are reflected in chapters on cytogenetics, hormones, immunocompetence, chemical carcinogenesis, metabolism of chemical carcinogens,

interactions of carcinogens with nucleic acids, effects of carcinogens on cell organelles, sequential aspects and effects in chemical carcinogenesis, radiation, radiation carcinogenesis, and cancer associated with asbestosis, schistosomiasis, foreign bodies, and scars. (3320 Refs)

132. EPIDEMIOLOGIC APPROACH TO CANCER.

Guinee VF
Dept. Epidemiology, Univ. Texas System Cancer Center, M.D. Anderson Hosp. and Tumor Inst., Houston, TX
Cancer - A Comprehensive Treatise Vol. 1. Etiology - Chemical and Physical Carcinogenesis. Second Edition. Becker FF, ed. New York, Plenum Press, 714 pp., 1982.

Cancer is presently classified by descriptive terms of site and histology. Whether a single factor or multiple factors are used to make the diagnosis, this 'test', which if 'positive' designates the patient as having cancer, will have the inherent qualities of sensitivity, specificity, accuracy, and validity. Incidence which reflects the probability of becoming ill and represents new cases during a specified time should be distinguished from prevalence which reflects the probability of being ill and represents all existing cases at the time of observation. Each cancer site has a characteristic pattern of age, sex, and race within the same population. In a heterogeneous population, the concept of race and ethnic origin as a major element in the description of a disease on the national level is readily accepted. Dramatic differences in the behavior of cancer mortality can be observed over time, and the incidence and mortality rates of cancer have a surprisingly wide geographic variation. Occupational history must be taken into account because of known and suspected carcinogenic agents. Case identification can be based on hospital records, autopsy, death certificates, cancer incidence surveys, or census. Epidemiologic research uses two basic approaches to cancer which are the cohort study (prospective) and the case-control study (retrospective). (76 Refs)

133. CHEMICAL AGENTS, THE ENVIRONMENT, AND THE HISTORY OF CARCINOGENESIS.

Becker FF
Dept. Anatomic and Res. Pathology, M. D. Anderson Hosp. and Tumor Inst., Univ. Texas System Cancer Center, Houston, TX
Cancer - A Comprehensive Treatise Vol. 1. Etiology - Chemical and Physical Carcinogenesis. Second Edition. Becker FF, ed. New York, Plenum Press, 714 pp., 1982.

Almost every agent that has been demonstrated to be carcinogenic in man has been carcinogenic in laboratory animals. The metabolic activation and deactivation of carcinogenic agents and, when testable, the macromolecular interactions in these animals are similar or identical to those in man. The interpretation of the significance of low-grade or benign tumors in rodents has been complicated by the fact that certain test animals have basal levels of spontaneous tumors. The significance of a few tumors in a small number of animals may indicate that several thousand tumors might result from exposure of human populations of millions. The risk/benefit ratio recognizes that several chemotherapeutic agents used in the treatment of malignancy may be carcinogenic. At its most obvious level, the risk/benefit ratio recognizes that faced with certain death from the primary tumor without treatment by the agent, the patient is offered little choice. Despite some four decades of intense and increasing exposure to a variety of carcinogens in the environment, a very limited increase in human tumors is now evident. (42 Refs)

134. CANCER ETIOLOGY: CURRENT STATES OF OUR KNOWLEDGE (MEETING ABSTRACT)

Thomas DB
No affiliation given
Fifth Annual Snohomish County Cancer Conference, February 11, 1982, Everett, Washington Snohomish County Medical Education Board; 1982

The environmental causes of cancer (known and suspected) are: A) chemicals - tobacco smoke, alcohol, industrial exposures, and drugs; B) radiation - ionizing and non-ionizing; C) exogenous hormones - transplacental exposures, oral contraceptives, menopausal estrogens, and others; D) infectious agents - viruses and others; and E) dietary factors - deficiencies, excesses, and contaminants. (no Refs)

135. THE ROLE OF RADIATION AND CHEMICALS IN THE INDUCTION OF MUTATIONS AND EPIGENETIC CHANGES DURING CARCINOGENESIS.

Trosko JE, Chang CC
Dept. Human Development, Coll. Human Medicine, Michigan State Univ., East Lansing, MI, 48824
Adv Radiat Biol; 9:2-36 1981

The relationships between physical and chemical agents and their interactions and the triggering of 'regulatory dysfunction' are reviewed. The abnormal phenotype that is cancer, the multistage nature of carcinogenesis, and the classes of genetic and environmental agents affecting genetic initiation and promotion are discussed. Evidence supporting both the somatic mutation and epigenetic theories of carcinogenesis is reviewed, and an integrative model allowing for mutational and/or epigenetic mechanisms in progression of carcinogenesis is proposed. (255 Refs)

136. HYGIENIC CONSIDERATION OF MAGNETIC ENVIRONMENTS.

Nakagawa M
Railway Labour Science Res. Inst., Japanese Natl. Railways, 2-5-6 Izumi-cho, Kokubunji, Tokyo 185, Japan
Sangyo Igaku; 23(6):591-605 1981

Studies on the biological effects of magnetism were reviewed with respect to whole-body exposure to large magnetic fields and local exposure to small magnets, and distinguishing systemic from local responses. Systemic biological effects have been observed after long-term whole-body exposures. However, determining the existence of biological effects after short-term exposures with even high doses is difficult. Because of the increased use of magnetism in synchrotrons, fusion reactors, levitated trains, and medical equipment further studies must be performed. Side effects on healthy tissue when using nuclear magnetic resonance imaging apparatus to diagnose malignant neoplasms was thought to be of an increasing concern. (129 Refs) (In JPN)

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NOTICE OF CURRENT REVIEWS: CARCINOGENESIS

As an additional service to readers of carcinogenesis (CK series) CANCERGRAMS, each issue now provides a bibliography of review articles of interest to carcinogenesis researchers, selected from journals screened for that month's CANCERGRAMS.

CHEMICAL CARCINOGENESIS

1. TOXICITY OF POLYBROMINATED BIPHENYLS (PBBS) IN DOMESTIC AND LABORATORY ANIMALS.
Damstra T, Jurgelski W, Posner HS, Vouk VB, Bernheim NJ, Guthrie J, Luster M, Falk HL
Natl. Inst. Environmental Health Sciences, Post Office Box 12233, Research Triangle Park, NC, 22709
Environ Health Perspect; 44():175-188 1982

2. CHLOROFORM: A REVIEW OF ITS METABOLISM, TERATOGENIC, MUTAGENIC, AND CARCINOGENIC POTENTIAL.
Davidson IW, Sumner DD, Parker JC
(c/o Parker) ECAO, Environmental Protection Agency, MD-52, Research Triangle Park, MD, 27711
Drug Chem Toxicol; 5(1):1-87 1982

3. FORMALDEHYDE IN PRESENT-DAY ENVIRONMENTAL TOXICOLOGY.
Beritic T, Kovac S, Dimov D
Odjel za profesionalne bolesti, Institut za medicinska istrazivanja i medicinu rada, Zagreb, Yugoslavia
Arh Hig Rada Toksikol; 32(4):363-395 1981
In SCR

4. HORMONES AS ETIOLOGICAL AGENTS IN NEOPLASIA.
Furth J
Inst. Cancer Res., Columbia Univ. Coll. Physicians and Surgeons, New York, NY
Cancer - A Comprehensive Treatise Vol. 1. Etiology - Chemical and Physical Carcinogenesis. Second Edition. Becker FF, ed. New York, Plenum Press, 714 pp., 1982.

5. CURRENT VIEWS ON HORMONES AND BREAST CANCER.
Molinatti GM, Limone P
Cattedra di Endocrinologia, Universita di Torino, C.so Polonia, 14, 10126 Turin, Italy
Minerva Med; 73(17):1047-1053 1982
In ITA

6. THE CHROMOSOMAL EFFECTS OF THE ORAL CONTRACEPTIVE.
Bishun NP
Tissue Culture and Cytogenetics Unit, Res. Dept., Marie Curie Memorial Foundation, The Chart, Oxted, Surrey, England
J Surg Oncol; 20(2):115-118 1982

7. TOXICITY AND CARCINOGENICITY OF NICKEL AND ITS COMPOUNDS. A REVIEW OF THE CURRENT STATUS.
Raithel HJ, Schaller KH
Institut fur Arbeits- und Sozialmedizin, Poliklinik fur Berufskrankheiten, Universitat Erlangen-Nurnberg, Schillerstrasse 25-29, D-8520 Erlangen, W. Germany
Zentralbl Bakteriol Mikrobiol Hyg [B]; 173(1/2):63-91 1981
In GER

8. HISTORICAL OVERVIEW OF NITROSOUREA DEVELOPMENT.
Goldin A
Div. Cancer Treatment, NCI NIH, Building 37, Room 5E20, Bethesda, MD, 20205
INSERM Symp; 19:3-11 1981

9. PATHOLOGY.
Goyer RA
Natl. Inst. Environmental Health Sciences, Research Triangle Park, NC
JAMA; 247(21):2973-2975 1982

RADIATION CARCINOGENESIS

10. IDENTIFYING THE HEALTH RISKS FROM VERY LOW-DOSE SPARSELY IONIZING RADIATION.
Dreyer NA, Friedlander E
Epidemiology Resources, Inc., P.O. Box 57, Chestnut Hill, MA, 02167
Am J Public Health; 72(6):585-588 1982

11. RISK OF RADIOLOGICAL EXAMINATIONS.
Jankowski J
Instytut Medycyny Pracy w Lodzi, ul. Olowiana 6, 91-614 Lodz, Poland
Pol Przegl Radiol; 45(6):383-386 1981
In POL

12. RADIOBIOLOGY OF RISK ESTIMATES IN MEDICAL IRRADIATION (MEETING ABSTRACT)
Rossi HH
Columbia University, New York, NY
IN: 148th National Meeting of the American Association for the Advancement of Science, January 3-8, 1982, Washington, D.C American Association for the Advancement of Science 182 pp., 1982.

13. RADIATION-INDUCED VASCULAR INJURY AND ITS RELATION TO LATE EFFECTS IN NORMAL TISSUES.
Law MP
MRC Cyclotron Unit, Hammersmith Hosp., London W12 OHS, England
Adv Radiat Biol; 9:37-73 1981

14. CURRENT CONCEPTS IN ULTRAVIOLET CARCINOGENESIS.
Granstein RD, Sober AJ
(c/o Sober) Dept. Dermatology, Massachusetts General Hosp., Boston, MA, 02114
Proc Soc Exp Biol Med; 170(2):115-125 1982

15. METABOLIC CHANGES AFTER EXPOSURE TO RADIONUCLIDES.
Kalistratova VS
No affiliation given
Med Radiol (Mosk); 27(6):62-71 1982
In RUS

DIETARY FACTORS IN CARCINOGENESIS

16. CAFFEINE: AN UPDATE.
Oser BL, Ford RA
Bernard L. Oser and Associates, 108-18 Queens Blvd., Forest Hills, NY, 11375
Drug Chem Toxicol; 4(4):311-329 1981

17. ANALYSIS OF MUTAGENIC EFFECTS OF FOREIGN SUBSTANCES IN THE FOOD PRODUCTS.
Maganova NB
Inst. Nutrition, Moscow, USSR
Vopr Pitan; (2):3-8 1982
In RUS

EPIDEMIOLOGY, ETIOLOGY AND GENETIC ASPECTS OF HUMAN CANCER

18. RADIATION EPIDEMIOLOGY (MEETING ABSTRACT)
Marks S
No affiliation given
148th National Meeting of the American Association for the Advancement of Science, January 3-8, 1982, Washington, D.C. American Association for the Advancement of Science 182 pp., 1982.

19. EPIDEMIOLOGICAL STUDIES ON RADIATION CARCINOGENESIS IN HUMAN POPULATIONS FOLLOWING ACUTE EXPOSURE: NUCLEAR EXPLOSIONS AND MEDICAL RADIATION.
Fabrikant JI
Donner Lab., Univ. California, Berkeley, CA, 94720
Yale J Biol Med; 54(6):457-469 1981

20. EPIDEMIOLOGIC APPROACH TO CANCER.
Guinee VF
Dept. Epidemiology, Univ. Texas System Cancer Center, M.D. Anderson Hosp. and Tumor Inst., Houston, TX
Cancer - A Comprehensive Treatise Vol. 1. Etiology - Chemical and Physical Carcinogenesis. Second Edition. Becker FF, ed. New York, Plenum Press, 714 pp., 1982.

21. EPIDEMIOLOGY AND EARLY DETECTION OF CANCER OF THE ESOPHAGUS.
Sorouri P
900 Hillside Road, Wilmington, DE, 19807
Gastrointestinal Cancer 1. Decosse JJand Sherlock P, ed. The Hague, Martinus Nijhoff Publishers, Cancer Treatment and Research, Vol. 3, 452 pp., 1981.

22. METABOLIC EPIDEMIOLOGY OF LARGE BOWEL CANCER.
Hill MJ
Central Public Health Lab., Colindale Ave., London NW9, England
Gastrointestinal Cancer 1. Decosse JJand Sherlock P, ed. The Hague, Martinus Nijhoff Publishers, Cancer Treatment and Research, Vol. 3, 452 pp., 1981.

23. EPIDEMIOLOGY OF GASTRIC CANCER AND ITS PRECURSOR LESIONS.
Correa P
Louisiana State Univ. Medical Center, New Orleans, LA, 70112
Gastrointestinal Cancer 1. Decosse JJand Sherlock P, ed. The Hague, Martinus Nijhoff Publishers, Cancer Treatment and Research, Vol. 3, 452 pp., 1981.

24. TRENDS IN THE INCIDENCE OF GASTRIC CARCINOMA (MEETING ABSTRACT)
Nobrega FT
Preventive and Internal Medicine, Mayo Clinic, Rochester, MN
Eleventh Annual William Beaumont Gastrointestinal Symposium, March 24-26, 1982, El Paso, Texas. William Beaumont Army Medical Center 56 pp., 1982.

25. CANCER IN INFLAMMATORY BOWEL DISEASE.
Bayless TM, Yardley JH
Johns Hopkins Hosp., Baltimore, MD, 21205
Gastrointestinal Cancer 1. Decosse JJand Sherlock P, ed. The Hague, Martinus Nijhoff Publishers, Cancer Treatment and Research, Vol. 3, 452 pp., 1981.

26. GENETIC ASPECTS OF GUT CANCER.
McConnell RB
Broadgreen Hosp., Liverpool, England
Gastrointestinal Cancer 1. Decosse JJand Sherlock P, ed. The Hague, Martinus Nijhoff Publishers, Cancer Treatment and Research, Vol. 3, 452 pp., 1981.

27. HOST AND ENVIRONMENTAL FACTORS ENHANCING CARCINOGENESIS IN THE RESPIRATORY TRACT.
Nettesheim P, Topping DC, Jaramabi R
Natl. Inst. Environmental Health Sciences, Research Triangle Park, NC, 27709
Annu Rev Pharmacol Toxicol; 21:133-163 1981

ENVIRONMENTAL AND OCCUPATIONAL FACTORS IN CARCINOGENESIS

28. A SEARCH FOR SAFE DRINKING WATER.
Hairsine MA, Schumm HA
Northern Indiana Health Systems Agency, Inc., South Bend, IN
A Search for Safe Drinking Water. Available from National Technical Information Service, Springfield, VA, as HRP-0903845/6, 68 pp., 1981.

29. OCCUPATIONAL EXPOSURES TO URANIUM: PROCESSES, HAZARDS, AND REGULATIONS.
Stoetzel GA, Fisher DR, McCormack WD, Hoenes GR, Marks S
Battelle Pacific Northwest Lab., Richland, WA
Occupational Exposures to Uranium: Processes, Hazards, and Regulations. Available from National Technical Information Service, Springfield, VA, as PNL-3341-USUR-01:, 91 pp., 1981.

CELLULAR AND MOLECULAR MECHANISMS IN CARCINOGENESIS

30. THE ROLE OF RADIATION AND CHEMICALS IN THE INDUCTION OF MUTATIONS AND EPIGENETIC CHANGES DURING CARCINOGENESIS.
Trosko JE, Chang CC
Dept. Human Development, Coll. Human Medicine, Michigan State Univ., East Lansing, MI, 48824
Adv Radiat Biol; 9:2-36 1981

31. SOME EFFECTS OF CARCINOGENS ON CELL ORGANELLES.
Svoboda DJ, Reddy J
Dept. Pathology and Oncology, Univ. Kansas Coll. Health Sciences, Kansas City, KS
Cancer - A Comprehensive Treatise Vol. 1. Etiology - Chemical and Physical Carcinogenesis. Second Edition. Becker FF, ed. New York, Plenum Press, 714 pp., 1982.

32. CHEMICAL CARCINOGENESIS: INTERACTIONS OF CARCINOGENS WITH NUCLEIC ACIDS.
Rajalakshmi S, Prema M, Sarma D
Dept. Pathology, Univ. Toronto, Toronto, Ontario, Canada
Cancer - A Comprehensive Treatise Vol. 1. Etiology - Chemical and Physical Carcinogenesis. Second Edition. Becker FF, ed. New York, Plenum Press, 714 pp., 1982.

33. A MOLECULAR RATIONALE FOR NITROSOUREA INDUCED CYTOTOXICITY.
Tew KD
Lombardi Cancer Center, Div. Medical Oncology, Georgetown Univ., 3800 Reservoir Road, N.W., Washington, DC, 20007
INSERM Symp; 19:61-77 1981

34. MODIFICATION OF DNA AND RNA BASES BY THE NITROSOUREAS.
Ludlum DB, Tong WP
Div. Oncology, Dept. Pharmacology and Experimental Therapy, Albany Medical Coll., Albany, NY, 12208
INSERM Symp; 19:21-31 1981

35. CALMODULIN AND CA2+ IN NORMAL AND TRANSFORMED CELLS.
Veigl ML, Sedwick WD, Vanaman TC
Dept. Microbiology and Immunology, Duke Univ. Medical Center, Durham, NC, 27710
Fed Proc; 41(7):2283-2288 1982

36. METABOLISM AND TOXICITY OF AFLATOXINS.
Hsieh DP, Wong JJ
Dept. Environmental Toxicology, Univ. California, Davis, Davis, CA, 95616
Adv Exp Med Biol; 136(partB):847-863 1982

37. REACTION OF MICROSOMAL AND CYTOSOLIC ENZYMES WITH N-ARYLACETOHYDROXAMIC ACIDS IN THE PRESENCE OF OXYGEN.
Lenk W, Scharmer U
Pharmakologisches Institut, Universitat Munchen, Nussbaumstrasse 26, D-8000 Munchen 2, W. Germany
Adv Exp Med Biol; 136(partB):951-970 1982

38. METABOLIC ACTIVATION AND DEACTIVATION MECHANISMS OF DI-, TRI-, AND TETRACHLOROETHYLENES.

Henschler D, Hoos R

Inst. Toxicology, Univ. Wurzburg, Versbacher Strasse 9, Wurzburg D-8700, W. Germany

Adv Exp Med Biol; 136(partA):659-666 1982

39. METABOLIC ACTIVATION AND HEPATOTOXICITY OF TRICHLOROETHYLENE.

Reynolds ES, Moslen MT

Chemical Pathology Lab., Dept. Pathology, Univ. Texas Medical Branch, Galveston, TX

Adv Exp Med Biol; 136(partA):693-701 1982

40. THE ACTIVATING ROLE OF GLUTATHIONE IN THE MUTAGENICITY OF 1,2-DIBROMOETHANE.

van Bladeren PJ, Breimer DD, Rotteveel-Smijs GM, Hoogeterp JJ, Mohn GR, De Groot A, Van Zeeland AA, Van der Gen A

Dept. Pharmacology, Univ. Leiden, P.O. Box 9502, 2300 RA Leiden, The Netherlands

Adv Exp Med Biol; 136(partA):809-820 1982

41. METABOLISM OF POLYCYCLIC AROMATIC HYDROCARBONS IN PLACENTA.

Juchau MR, Chao ST, Namkung MJ

Dept. Pharmacology, Sch. Medicine, SJ-30, Univ. Washington, Seattle, WA, 98195

Adv Exp Med Biol; 136(partA):555-573 1982

MODIFICATION OF CARCINOGENESIS

42. THE INTESTINAL ENZYMATIC BIOTRANSFORMATION SYSTEM: POTENTIAL ROLE IN PROTECTION FROM COLON CANCER.

Hoensch HP, Hartmann F

Medizinische Universitatsklinik, D-7400 Tubingen, W. Germany

Hepatogastroenterology; 28(4):221-228 1981

VIRAL AND IMMUNOLOGICAL ASPECTS OF CARCINOGENESIS

43. THE ONCOGENIC CIRCLE CLOSES.

Rigby PW

Imperial Coll. Science and Technology, London SW7 2BZ, England

Nature; 297(5866):451-453 1982

44. ANALYSIS OF CASES OF HEPATIC CELL CARCINOMA THAT TRANSFORMED FROM VIRAL HEPATITIS.

Ichida F, Honma A, Soga K

Third Dept. Internal Medicine, Niigata Univ. Sch. Medicine, Niigata, Japan

Nippon Rinsho; 40(2):468-477 1982

In JPN

45. ROLE OF VIRUSES IN THE INDUCTION OF PRIMARY INTRACRANIAL TUMORS.

Walsh JW, Zimmer SG, Perdue ML

Div. Neurosurgery, Univ. Kentucky Medical Center, 800 Rose St., Lexington, KY, 40536

Neurosurgery; 10(5):643-662 1982

METHODOLOGY IN CARCINOGENESIS RESEARCH

46. TRANSLATION OF PHARMACOKINETIC/BIOCHEMICAL DATA INTO RISK ASSESSMENT.

Dietz FK, Reitz RH, Watanabe PG, Gehring PJ

Toxicology Res. Lab., Health and Environmental Sciences, Dow Chemical, 1803 Building, Midland, MI, 48640

Adv Exp Med Biol; 136(partB):1399-1424 1982

47. IN VITRO ASSAYS FOR THE DIFFERENTIATION OF TUMOR PROMOTORS FROM CARCINOGENS AFTER ROUTINE CARCINOGENESIS BIOASSAYS (MEETING ABSTRACT)

Ward JM, Rice JM

Frederick Cancer Research Center, Frederick, MD

Second Annual Meeting of the Society of Environmental Toxicology and Chemistry, November 22-23, 1981, Arlington, Virginia. Society of Environmental Toxicology and Chemistry 150 pp., 1982.

48. ENVIRONMENTAL CARCINOGENS: SELECTED METHODS OF ANALYSIS. VOLUME 4. SOME AROMATIC AMINES AND AZO DYES IN THE GENERAL AND INDUSTRIAL ENVIRONMENT.

Egan H, Fishbein L, O'Neill IK, Castegnaro M, Bartsch H

Lab. Government Chemist, London, England

IARC Sci Publ (40): 347 pp., 1981.

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ICRDB CANCERGRAM

ENVIRONMENTAL AND OCCUPATIONAL CARCINOGENESIS

SERIES CK02 No. 82/11

NOVEMBER, 1982

This Cancergram is a service of the INTERNATIONAL CANCER RESEARCH DATA BANK (ICRDB) PROGRAM of the U.S. National Cancer Institute. Every few weeks, an updated Cancergram containing abstracts of selected cancer-related articles recently published in more than 3000 journals, and dealing with the topic indicated by the above title, is sent to researchers working in this area. These researchers are identified on the basis of the description of their current research project that has been submitted to the ICRDB Program, directly or via granting agencies.

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ENVIRONMENTAL FACTORS: POLLUTION

1. INHALATION CARCINOGENESIS: AN OVERVIEW.

Chretien J
Hopital Laennec, 42 rue du Sevres, F-75007 Paris, France
Recent Results Cancer Res; 82:1-10 1982

Environmental carcinogens and their site specific action under conditions of inhalation are considered. The main carcinogens to which man is currently known to be exposed, their mode of penetration, and the histological types of carcinoma they produce are listed. Carcinogens identified in tobacco smoke include dimethylnitrosamine, diethylnitrosamine, methylethylnitrosamine, N-nitrosopyrolidine, nitrosopiperidine, benzo(a)pyrene, methylbenzo(a)pyrene, dibenz(a,h)acridine, dibenz(a,j)acridine, dibenz(c)carbazole, Beta-naphthylamine, benzo(b)fluoranthene, benzo(j)fluoranthene, methylfluoranth-

HE 20.3173/2:

ene, benzo(a)anthracene, chrysene, methchrysenes, and benzo(c)phenanthrene. A complex aerosol like tobacco smoke is particularly oncogenic due to synergism between components, small size of particles, and the repetitive nature of the exposure. The list of chemical environmental inhaled carcinogens will undoubtedly grow. Difficulties experienced in the detection of environmental carcinogens are discussed. Mechanisms implicated in carcinogenesis at respiratory surfaces are briefly reviewed. (45 Refs)

2. AIR POLLUTION AS A RISK FACTOR IN LUNG CANCER.

Vena JE
Dept. Social and Preventive Medicine, State Univ. New York at Buffalo, 2211 Main St., Buffalo, NY, 14214
Am J Epidemiol; 116(1):42-56 1982

Retrospective data on residential and employment history and on smoking were obtained from 417 white male lung cancer patients and 752 controls with nonrespiratory, nonneoplastic diseases, from Erie County, New York, admitted to Roswell Park Memorial Institute from 1957-1965. Total suspended particulate data and a historical review of problem point sources of pollution were used to delineate air pollution zones. The findings did not support the hypothesis that air pollution alone significantly increased risk for lung cancer. However, there was increased risk from smoking and occupational exposures if there was also long-term exposure to air pollution. The risk for heavy smokers with heavy exposure to air pollution was over four times that of men with none of the high exposure traits. The findings suggest an apparent synergistic mechanism involving smoking and air pollution and smoking and occupational exposures. The findings are consistent with previous epidemiologic studies and with biologic and experimental evidence. The limitations of the methods used here necessitate further study and replication. However, the study indicates that air pollution should not be dismissed as a risk factor in lung cancer. (Author abstract) (55 Refs)

3. AIR POLLUTION AND CANCER. A REVIEW OF EXPERIMENTAL INVESTIGATIONS.

Madsen ES, Nielsen PA, Pedersen JC
(c/o Nielsen), Stigardsvej 2, DK-2900 Hellerup, Denmark
Ugeskr Laeger; 144(23):1719-1721 1982

A review of studies on the relationship between urban air pollution and cancer shows the presence of mutagenic and/or carcinogenic, mostly organic, compounds (polycyclic aromatic hydrocarbons, polar, directly acting mutagens, eg, substituted derivatives of polycyclic aromatic hydrocarbons and analogous heterocyclic compounds) in urban air. Most of these mutagens and carcinogens are bound to suspended particulates, mostly to respirable particles with small aerodynamic diameter. Surprisingly, high mutagenic activity was found for the compounds extracted from air samples in Copenhagen. (28 Refs) (In DAN)

ENVIRONMENTAL FACTORS: COMMERCIAL PRODUCTS

4. OVARIAN CANCER AND TALC. A CASE-CONTROL STUDY.

Cramer DW, Welch WR, Scully RE, Wojciechowski CA
Dept. Obstetrics and Gynecology, Brigham and Women's Hosp., Boston, MA, 02115
Cancer; 50(2):372-376 1982

Opportunities for genital exposure to talc were assessed in 215 white females with epithelial ovarian cancers and in 215 control women from the general population matched by age, race, and residence. Ninety-two (42.8%) cases regularly used talc either as a dusting powder on the perineum or on sanitary napkins compared with 61 (28.4%) controls. Adjusted for parity and menopausal status, this difference yielded a relative risk of 1.92 (p less than 0.003) for ovarian cancer associated with these practices. Women who had regularly engaged in both practices had an adjusted relative risk of 3.28 (p less than 0.001) compared to women with neither exposure. This provides some support for an association between talc and ovarian cancer hypothesized because of the similarity of ovarian cancer to mesotheliomas and the chemical relation of talc to asbestos, a known cause of mesotheliomas. The authors also investigated opportunities for potential talc exposure from rubber products such as condoms or diaphragms or from pelvic surgery. No significant differences were noted between cases and controls in these exposures, although the intensity of talc exposure from these sources was likely affected by variables not assessed in this study. (Author abstract) (24 Refs)

ENVIRONMENTAL AND OCCUPATIONAL FACTORS: RADIATION

5. RADIATION AND HUMAN HEALTH.

Gofman JW
Univ. California, Berkeley, CA
Radiation and Human Health. San Francisco, Sierra Club Books, 908 pp., 1981.

The relationship between radiation and human health is considered under the following chapter headings: energy interchanges and health, origins of human cancer, induction of cancer and leukemia by ionizing radiation, a systematic approach to the quantitative aspects of radiation carcinogenesis, with personal and public health risk estimates, human epidemiological evidence concerning radiation carcinogenesis, induction of human breast cancer by ionizing radiation, from peak percents to whole-body cancer doses by age at irradiation, practical applications of the whole-body cancer dose, partial-body irradiation and cancer doses for specific kinds of cancers, evidence for a linear or supralinear dose-effect relationship and for the nonexistence of a 'threshold' dose, handling the internal emitter; internal alpha emitter, biologically important, man-made alpha-particle-emitting nuclides (plutonium and other transuranics), lung cancers already produced by plutonium inhalation, plutonium-induced lung cancers in a plutonium energy economy, likely radiation doses and their effects in a nuclear-power economy, ionizing-radiation exposures from natural sources, consumer products, and particular occupations, ionizing-radiation exposures from medical diagnostic and therapeutic irradiation, induction of human leukemia by ionizing ra-

diation, congenital effects of ionizing radiation, and genetic and chromosomal effects of ionizing radiation. (299 Refs)

6. IONIZING RADIATION.

Voelz GL
Health Div., Los Alamos Scientific Lab., Los Alamos, NM
Occup Health Saf; 51(7):34-37 1982

The clinical evaluation of occupationally related exposure to ionizing radiation is considered. Observed health effects due to radiation have occurred mostly after acute exposures. Low dose effects are not easily observable. In 1975 the percentage of total collective radiation doses to workers (185,000 man rem) was distributed as follows: medical workers 29%; industrial users of radionuclides 20%; workers in the nuclear fuel cycle 14%; dental workers 10%; research and development workers 6%; and others 11%. The av dose for workers monitored for radiation in the United States was 0.13 rem/yr. Natural background radiation and medical use of radiation are responsible for 94% of the total exposure to the general population. Causation is not provided by epidemiologic association alone, and failure to recognize this has led to confusion concerning risk assessment. Present knowledge suggests that cancer risk after radiation is the most critical component of the various associated risks, including genetic and prenatal teratogenic effects. Thus cancer risks must be considered a key factor in developing radiation exposure standards. (11 Refs)

7. THE WORK OF THE NRPB 1977/80 AND A REVIEW OF THE FIRST 10 YEARS.

National Radiological Protection Board
Natl. Radiological Protection Board, Chilton, Didcot, Oxfordshire OX11 0RQ, England
The Work of the NRPB 1977/80 and a Review of the First 10 Years. Chilton, Didcot, Oxfordshire, National Radiological Protection Board, 70 pp., 1981.

The work of the National Radiological Protection Board (NRPB) was evaluated with regard to its first 10 yr (1970-80); the work of the board between 1977 and 1980 (international activities, national advice, and information services); assessment of radiation exposure (current exposure in the United Kingdom, natural and medical radiation, environmental surveillance, occupational exposure, miscellaneous sources, radioactive waste, and transport of radioactive materials); research and development (nuclear industry: radiological consequences of accidental release of radioactivity, radiological impact of routine discharges, management of radioactive wastes; biology, physics, and instrumentation: internal dosimetry of radionuclides, removal of radionuclides from the body, epidemiology, non-ionizing radiation, and individual, environmental, and experimental dosimetry); and technical services (physical monitoring for internal contamination, biological dosimetry, advice and assistance, Health and Safety Commission Agency Agreement, radiological protection in veterinary practice, instrument evaluation, specialized calibrations, non-ionizing radiations, national arrangement for incidents involving radiation, lightning conductors incorporating radioactive attachments, radiation incidents, and training). (36 Refs)

8. PROBLEMS OF RADIATION HYGIENE IN CONNECTION WITH THE REPLANTATION OF WASTE BANKS FROM URANIUM MINES.

Skalicky J, Klener V, Thomas J, Romanidis K
Ustav hygieny prace v uranovem prumyslu, Kamenna, Czechoslovakia
Cesk Hyg; 27(3):137-144 1982

The hygienic feasibility of replantation of recent waste and 16th-century waste banks in the region of uranium mines in Czechoslovakia was studied. The use of timber grown on replanted waste banks, the consumption of milk and meat from cattle and sheep grazing in those areas, and of berries from the woods were found not to cause any significant radiation exposure of the population. The erection of permanent dwellings on waste banks is not recommended because of the possibility of significant radiation exposure. (7 Refs) (In CZE)

9. LUNG CANCER SCREENING PROGRAMS IN CANADIAN URANIUM MINES.

Band P, Feldstein M, Watson L, King G, Saccomanno G
Hopital Notre-Dame, Institut du Cancer de Montreal, Montreal, Canada
Recent Results Cancer Res; 82:153-158 1982

A program for the early detection of lung cancer in Canadian uranium mine workers is described. Results obtained at two mining sites, Uranium City (periodic sputum cytology and chest x-rays) and Elliot Lake (sputum cytology) are reported. In the Uranium City project, the overall observed frequency of abnormal cytology was 22% for smokers and 8% for nonsmokers. The estimated frequency of abnormal cytology among smokers was significantly dependent on the duration of cigarette smoking and of uranium mining. The presence of both risk factors, smoking and exposure to radon daughters, resulted in a steady increase in the observed frequency of abnormal cytology linearly related to cumulative working level mo exposure and to the number of yr of uranium mining. As of September 1980 (project begun September, 1974) seven individuals with marked atypia and six with lung cancer were observed among high risk smoker underground uranium miners. At Elliot Lake, the proportion of abnormal cytology findings was 48% and 5% for smokers and nonsmokers, respectively. Two patients with squamous cell lung carcinoma and six individuals with marked atypia were detected by sputum cytology. Based on these results, it is suggested that sputum cytology surveys of uranium miners may be confined to high risk workers with screening initiated 10 yr after first occupational exposure to radiation. Individuals with marked atypias may be followed with twice yearly sputum cytology and selective segmental fiberoptic bronchoscopy for 2 yr and with twice yearly cytology for an additional 2 yr or longer if marked atypia persists. (15 Refs)

10. THE CONTRIBUTION OF URANIUM MINERS TO LUNG CANCER HISTOGENESIS.

Saccomanno G
St. Mary's Hosp., Grand Junction, CO
Recent Results Cancer Res; 82:43-52 1982

The development of efforts to regulate health conditions in the uranium mining industry, the evolution of diagnostic technology to evaluate worker health, and the histopathology of lesions which develop in uranium miners are discussed. Methods of collecting sputum for cytology are described. Variables which were found to affect epidemiological analysis included variability in radon daughter levels from mine to mine, in the same mine over periods of time, and even from stope to stope;

age of workers and duration of exposure; cigarette smoking in workers; accuracy of records; sample size. Present law provides that the company in which a uranium miner was last employed is liable for compensation to the miner in the event of injury to health. This has sometimes lead to unfair judgements against uranium mining companies. Incidence and cell type of lung cancer occurring in uranium miners, and lung cancer histogenesis (sequential squamous cell metaplasia, benign and premalignant lesions) are reviewed. (7 Refs)

11. EPIDEMIOLOGICAL STUDIES OF RADIATION WORKERS: PRELIMINARY COMMUNICATION.

Schofield GB
British Nuclear Fuels Ltd., Sellafield, Seascale, Cumbria CA20 1PG, England
J R Soc Med; 75(6):450-456 1982

British Nuclear Fuels Limited has embarked on a study of the mortality data among those of its workforce who were employed prior to 1 January 1976. The study covers a total population of about 41,000 current and ex-employees, but is initially concerned with a radiation worker cohort of 7,500 at the Sellafield establishment where the highest radiation doses are received. Tracing of the health status of ex-employees has been undertaken using the services provided by the Office of Population Censuses and Surveys (OPCS) and the Department of Health and Social Security (DHSS) and it is expected that ultimately the level of trace will be better than 97%. Mortality data not specifically related to radiation workers are included and relate to male deaths among serving staff and pensioners during the years 1962-1978. Those observed deaths (O) are compared on an age standardized basis with those expected (E) from the general population, the ratio O/E being about 1 for all cancers and less than 1 for non-cancer deaths. This pattern is consistent with the well known 'healthy worker' effect seen in industry. (Author abstract) (4 Refs)

12. SOME CONFOUNDING FACTORS IN THE STUDY OF MORTALITY AND OCCUPATIONAL EXPOSURES.

Gilbert ES
Pacific Northwest Lab., P.O. Box 999, Richland, WA, 99352
Am J Epidemiol; 116(1):177-188 1982

With the recent interest in the study of occupational exposures, the impact of certain selective biases in the groups studied is a matter of some concern. In this paper, data from the Hanford nuclear facility population (southeastern Washington State, 1947-1976), which includes many radiation workers, are used to illustrate a method for examining the effect on mortality of such potentially confounding variables as calendar yr, length of time since entering the industry, employment status, length of employment, job category, and initial employment yr. The analysis, which is based on the Mantel-Haenszel procedure as adapted for a prospective study, differs from most previous studies of occupational variables which have relied primarily on comparing standardized mortality ratios (utilizing an external control) for various subgroups of the population. Results of this analysis confirm other studies in that reduced death rates are observed for early yr of follow-up and for those with higher socioeconomic status (as indicated by job category). In addition, workers employed less than 2 yr and especially terminated workers are found to have elevated death rates as compared with the remainder of the study population. It is important that such correlations be taken into account in planning and interpreting analyses of the effects of occupational exposure. (Author abstract) (21 Refs)

13. MONITORING THE CRITICAL RADIATION EXPOSURE PATHWAYS AT A BWR NUCLEAR POWER STATION.

Golden JC, Chandrasekaran ES, Kahn B
Commonwealth Edison Co., Chicago, IL, 60690
Health Phys; 42(6):777-788 1982

Iodine-131 in milk and gamma radiation from radionuclides in air in the environment of a 3-unit nuclear power station were measured at the levels predicted for airborne effluent. These measurements were part of a modified environmental radiological monitoring program to confirm the population doses computed from radionuclide release rates and environmental transfer models. The limits of detection were lowered relative to conventional monitoring programs by analyzing 21 L samples of milk for 131I and by determining external gamma radiation with a system that combined use of thermoluminescent dosimeters, pressurized ionization chambers, and NaI(T1) survey meters. For monitoring periods slightly longer than 6 mo, during a time when fallout from atmospheric nuclear tests contributed very little, the av measure, 131I concentration in milk was 0.1 pCi/L for cows on a nearby pasture and 0.02 pCi/L for cows at a more distant control location, compared to predicted values of 0.07 and 0.02 pCi/L, respectively; the av radiation exposure from airborne radionuclides measured at 16 nearby dosimeter locations was 7 mR, compared to the av of predicted values of 4 mR. (Author abstract) (16 Refs)

14. EVALUATION OF 133XE RADIATION EXPOSURE DOSIMETRY FOR WORKERS IN NUCLEAR MEDICINE LABORATORIES.

Piltingsrud HV, Gels GL
Nuclear Medicine Lab., Div. Electronic Products, BRH, FDA, Univ. Cincinnati Medical Center, Cincinnati, OH, 45267
Health Phys; 42(6):837-848 1982

Evaluation of past studies of 133Xe dosimetry and nuclear medicine laboratory air concentrations of 133Xe indicate that significant levels of 133Xe may exist in routine operational environments of a nuclear medicine laboratory. This leads to the question of whether present health physics radiation control methods are adequate to keep occupational personnel exposures within acceptable levels. It would appear that if personnel dosimeters (film and TLD badges) respond properly to the radiation of 133Xe, normal health physics control procedures are probably adequate. If they do not respond adequately, personnel exposures may exceed recommended levels and special instrumentation or administrative procedures are called for. Therefore, the first step in studying potential problems in the subject area is to evaluate the response of a variety of personnel radiation dosimeters to 133Xe. This paper describes the methods and materials used to expose personnel dosimeters to known amounts of 133Xe radiations in an exposure chamber constructed at the BRH Nuclear Medicine Laboratory. Also presented are calculated values for Dose Equivalents (DE) in a phantom form external radiation resulting from immersion in clouds having a constant concentration of 133Xe but varying cloud radii. This implies the relative importance of the beta and the X + gamma radiation responses of the personnel dosimeters under various exposure conditions. Results of this study indicate that none of the dosimeter systems evaluated provide adequate performance for use as a primary indicator of the DE resulting from 133Xe radiations for a worker in a nuclear medicine laboratory, and that personnel dosimetry considerations in 133Xe-containing atmospheres are very dependent on the radii of the 133Xe clouds. (Author abstract) (14 Refs)

15. MORBIDITY OF THE PERSONNEL OF THE RADIODIAGNOSTIC DEPARTMENTS.

Usol'tsev VI
Leningrad, USSR
Gig Sanit; (6):86-87 1982

To evaluate the health hazards of small doses of ionizing radiation, overall morbidity indices were studied among the personnel of radiodiagnostic departments. Group 1 included the radiologists and their assistants who were present in the examination room, while Group 2 included the assistants who worked in the separate room. The morbidity index and av duration of the disease in Group 1 was 1.5x greater than those in Group 2. (7 Refs) (In RUS)

16. RISKS OF SMALL RADIATION DOSES.

Fritz-Niggli H
Strahlenbiologisches Institut, August Forel-Strasse 7, CH-8029 Zurich, Switzerland
Praxis; 71(20):871-880 1982

Human exposure to man-made radiation is due primarily to diagnostic and therapeutic uses of radiation in medicine. The mean bone marrow dose/yr for the Swiss population in 12 millirem from artificial sources, compared with 120 millirem for normal background radiation. Artificial radiation may increase lifetime cancer risk by 0.05%/rem. The somatic and genetic risks may be significantly increased for patients and medical personnel. (9 Refs) (In GER)

OCCUPATIONAL FACTORS: SPECIFIC AGENTS OR INDUSTRIES

17. MORTALITY RISKS IN AUSTRALIAN MEN BY OCCUPATIONAL GROUPS, 1968-1978. VARIATIONS ASSOCIATED WITH DIFFERENCES IN DRINKING AND SMOKING HABITS.

McMichael AJ, Hartshorne JM
Div. Human Nutrition, Commonwealth Scientific and Industrial Res. Organization, Kintore Ave., Adelaide 5000, Australia
Med J Aust; 1(6):253-256 1982

Analysis of patterns of male mortality in Australia during 1968-1978 shows elevated death rates for liver cirrhosis, alcoholism and alcoholic psychosis in various rural, service, and 'blue-collar' occupations. The risks of mortality from lung cancer and cancers of the upper alimentary tract and larynx - sites influenced by alcohol and tobacco consumption - are raised in the latter two groups. In contrast, the risks of mortality from cancer of the colon, thought to be influenced by dietary 'affluence', are consistently higher for professional and 'white-collar' groups. As reported in other populations, stomach cancer mortality risks are higher for service and blue-collar groups. The risks of mortality from coronary heart disease and cerebrovascular disease are also higher, albeit moderately, for these two groups. The consideration of personal behavior as a reflection of socioeconomic and subcultural influences is a prerequisite to effective community health education. (Author abstract) (20 Refs)

18. SPUTUM CYTOLOGY AND ASBESTOS EXPOSURE: A PRELIMINARY REPORT.

Simard A, Vaucair R, Feldstein M, Bergeron F, Morissette N, Band P
Institut du Cancer, Hopital Notre-Dame et Universite de Montreal, Montreal, Quebec, Canada
Recent Results Cancer Res; 82:147-152 1982

The results of a sputum cytology study of asbestos workers are reported. Four of six mild atypias were found in workers 40-60 yr old. No indication of significant increase in the rate of neoplastic or dysplastic lesions in smoking asbestos workers was observed, although these results are preliminary, and a high percentage of unsatisfactory smears was obtained. (11 Refs)

19. RESULTS OF A LUNG CANCER DETECTION PROGRAM IN AN ASBESTOS INDUSTRY.

Kotin P, Paul W
Johns-Manville Corporation, Denver, CO
Recent Results Cancer Res; 82:131-137 1982

Early diagnosis of asbestos-related lung pathology by sputum cytology in an industrial setting is described. Conclusions based on the Johns-Manville experience were as follows: sputum cytology is still in the research state with respect to its usefulness as a screening tool, there is no evidence, as yet, that early diagnosis will significantly improve prognosis, data are needed on the effect of removal of a worker from a potentially high-risk environment, cytopathological experience is required during evaluation of sputum cytology findings, there is a definite need for federal and provincial regulations with respect to cigarette smoking in the workplace, especially in the asbestos industry. In all cases of lung cancer found in the Johns-Manville sputum cytology program, the employees involved were long-term cigarette smokers, most having smoking histories of 25 yr or more. (2 Refs)

20. FLAME-ATTENUATED FIBERGLASS: ANOTHER ASBESTOS?

Kilburn KH
Dept. Medicine, Univ. Southern California Sch. Medicine, 2025 Zonal Ave., Los Angeles, CA, 90033
Am J Industr Med; 3(1):121-125 1982

The possibility that flame attenuation produced fiberglass is a health hazard to workers exposed for long periods is addressed. Animal studies have demonstrated that fine or thin fiberglass with lengths greater than 8 microns has an effect similar to that of asbestos in producing pleural sarcoma. While epidemiologic studies have demonstrated site-specific increases in mortality, problems with these studies make conclusions impossible. Five types of studies are suggested for the decade 1980-1990 to determine the actual health hazards of long-term exposure. (12 Refs)

21. INDUSTRIAL HYGIENE REPORT. HOMESTAKE MINING COMPANY, LEAD, SOUTH DAKOTA.

Zumwalde RD, Ludwig HR, Dement JM
Natl. Inst. Occupational Safety and Health, Cincinnati, OH
Industrial Hygiene Report. Homestake Mining Company, Lead, South Dakota. Available from National Technical Information Service, Springfield, VA, as PB82-179961:, 267 pp., 1981.

Worker exposures to free silica (7631869), radon (10043922) daughters, arsenic (7440382), and asbestos (1332214) fibers were determined at the Homestake Mining Company (SIC-

1041) in Lead, South Dakota from July 12 to 23, 1977. The mining operation was being investigated due to an elevated incidence of deaths from malignant and nonmalignant respiratory diseases in the mining population. About 968 employees worked in the underground operations on 35 levels from 1,700 to 8,000 feet. Approx 170 employees representing 90% of the job titles were sampled for an entire work shift using personal filters. Data for free silica was used from a survey conducted in 1976 for the mine. Midget impinger samples were collected for dust. Samples were collected from 448 miners during an entire work shift with each crew over a 2 wk period. Work practices were documented. The authors conclude that mean exposures for free silica, radon daughters, arsenic, and asbestos fibers are within OSHA standards for most job classifications. They suggest that the potentiating effect of the contaminants could predispose some workers to respiratory diseases. They recommend a continuing education program for job hazards, maintenance procedures, and cleanup methods, and to ensure that they understand how to use respiratory protective equipment and protective clothing. They suggest sealants to contain radioactive contamination from rock, and reduction of dust concentrations. (Author abstract)

22. EXPOSURE FOR FORMALDEHYDE AND CANCER OF THE LUNG IN DANISH PHYSICIANS.

Andersen SK, Jensen OM, Oliva D
Cancerregisteret, Strandboulevarden 49, DK-2100 Copenhagen 0, Denmark
Ugeskr Laeger; 144(21):1571-1573 1982

Risk of lung cancer due to exposure to formaldehyde was studied in 84 Danish physicians (79 men and 5 women) in whom lung cancer was diagnosed during the period 1943-1977 and in 252 matched control physicians without lung cancer in a case-control cohort study. The specialities of the patients included general practice in 51 men and 2 women, internal medicine in 3 men, surgery in 8 men, and other (not including pathology, forensic medicine and anatomy) in 17 men. Sixty-nine of the 79 men and 4/5 women have never been exposed to formaldehyde occupationally. No exposure to formaldehyde was found in 202 men and 15 women in the control group as well as 23 men and 0 woman in the control group were employed in exposed speciality (pathology, forensic medicine or anatomy). Ten men in the patient group and 35 in the control group were employed in medical laboratory. The relative risk of lung cancer was found to be 1.0 for the patients exposed to formaldehyde and 0.8 for those employed in laboratory. The findings indicate that formaldehyde cannot be assumed to be a pulmonary carcinogen in humans in the concentrations involved. The investigation does not rule out the possible carcinogenic effect of formaldehyde on the more proximal parts of the respiratory tract due to its high solubility in water. (12 Refs) (In DAN)

23. MORTALITY AMONG WORKERS IN A NICKEL REFINERY AND ALLOY MANUFACTURING PLANT IN WEST VIRGINIA.

Enterline PE
Dept. Biostatistics, Graduate Sch of Public Health, Univ. Pittsburgh, Pittsburgh, PA, 15261
JNCI; 68(6):925-933 1982

Workers from a nickel refinery at Huntington, W. Va., which received a nickel matte from smelters in Onatrio, Canada, during 1922-47 were studied for excesses in sinonasal and lung cancers. Other workers who were in a nickel alloy production plant operated in conjunction with the refinery but who did not work in the refinery were also studied. Evidence is presented on the existence of a nasal cancer hazard and possibly a lung cancer hazard among workers employed in the nickel refinery. Two of these workers developed a sinonasal cancer. Evidence of a respiratory cancer hazard in other parts of the plant before or after 1947 is weak, and the observed results could be due to chance variations from the mortality experience of the standard reference populations. Among nonrefinery workers hired while the nickel refinery was in operation, 2 employees had a probable sinonasal cancer. The first employee worked in a high-temperature conversion process where nickel carbonate was decomposed to nickel oxide, and the second employee is believed to have done maintenance work in the plant where this process was used. For both cohorts combined there were slight overall excesses in lung, stomach, and prostate cancers with some evidence of a dose-response relationship for these cancers. (Author abstract) (11 Refs)

24. SCROTAL CARCINOMA IN CONNECTICUT METAL WORKERS. SEQUEL TO A STUDY OF SINONASAL CANCER.

Roush GC, Kelly JA, Meigs JW, Flannery JT
Connecticut Cancer Epidemiology Unit, Yale Univ., 60 College St., New Haven, CT, 06510
Am J Epidemiol; 116(1):76-85 1982

An excess risk for sinonasal cancer among Connecticut metalworkers with potential exposure to cutting oils led to the hypothesis of a relationship between the same occupational category and squamous cell carcinoma of the scrotum. Cases of this latter tumor (n = 45) diagnosed in 1935-1973 were identified by the Connecticut Tumor Registry. For decedents, male controls from Connecticut death certificates were matched to decedent cases on age, yr of birth, and availability of occupational information; for living subjects, male controls from records of the Connecticut Department of Motor Vehicles were matched on the above variables and town of residence. Death certificates and city directories provided occupational information. For the narrowly defined indicator of cutting oil exposure (toolmaker, setter, set-up man, hardener, polisher, automatic screw machine operator), the odds ratio for squamous cell carcinoma of the scrotum was 4.9, 95% confidence limits (CL): 1.8, 15.9. The broad indicator of cutting oil exposure (the aforementioned categories plus machinist and machine operator (not otherwise specified)) had an odds ratio of 10.5, 95% CL: 4.0, 36.9 and explained 57% of the cancers. For this broad category, the risk persisted in the most recent time period of diagnosis, 1966-1973 (OR = 18.6). For this broad category, major biases could not be detected when the following additional covariables were taken into account individually where possible: source of occupation, nativity, town of residence, stage at diagnosis, and cause of death. City directory and death certificate information implied that at lest 80% of cases in the high risk category worked in the Connecticut region before age 40. (Author abstract) (33 Refs)

25. CANCER MORBIDITY AMONG POLISHERS.

Jarvholm B, Thiringer G, Axelson O
Dept. Occupational Medicine, Sahlgrenska sjukhuset, Gothenburg, Sweden
Br J Ind Med; 39(2):196-197 1982

The mortality pattern among 86 men was determined to investigate the possible hazards of polishing steel. The men had polished steel with polishing paste for at least 5 yr. The polishing pastes had contained tallow, beeswax, carnauba wax, alun-

dum, carborundum, ferric oxide, and chalk. A total of 18 men had died compared with 13.3 expected. Four had died of stomach cancer compared with 0.44 expected (less than 0.005). The mortality for other causes of death was not increased. The study does not permit any definite conclusion but indicates a possible cancer hazard among polishers. (Author abstract) (8 Refs)

26. DETECTION OF POLYCYCLIC AROMATIC HYDROCARBONS IN SKIN OIL OBTAINED FROM ROOFING WORKERS.

Wolff MS, Taffe B, Boesch RR, Selikoff IJ
Div. Environmental Medicine, Mount Sinai Sch. Medicine, New York, NY, 10029
Chemosphere; 11(6):595-599 1982

Blood serum and skin oil samples from roofing workers were analyzed for polycyclic aromatic hydrocarbons (PAH) to assess tissues burdens of PAH. In six serum samples, PAH were below the limit of detection (1-60 picog/ml). However, in skin oil of nine roofers, PAH were detected at 0.02-13 ug/g (lipid wt of skin oil), or a total of 0.048-36 nanog/36 square cm in a half period. The presence of PAH in skin oil provided evidence of continued body burden of these chemicals after leaving the workplace. Elimination by metabolism provides the obvious opportunity for dermal, as well as systemic, insult of metabolites of PAH, which are known to possess powerful carcinogenic activity. (13 Refs)

27. MORTALITY AMONG RUBBER WORKERS: V. PROCESSING WORKERS.

Delzell E, Monson RR
Duke Univ. Comprehensive Cancer Center, Durham, NC
JOM; 24(7):539-545 1982

Cause-specific mortality was evaluated among 2,666 men employed in the processing division of a rubber manufacturing plant. The division was divided into two sections: front processing (compounding, mixing and milling operations) and back processing (extrusion, calendering, cement mixing and rubberized fabrics operations). Mortality rates for all processing workers combined and for men in each section were compared with rates for US white males or for workers employed in other divisions of the same plant. Compared with either referent group, men in the processing division had increased mortality from leukemia, emphysema, and cancers of the stomach, large intestine, and biliary passages and liver. An excess number of deaths from stomach and large intestine cancer was found predominantly among men in the front processing section (33 observed vs 17.7 expected deaths, based on rates in nonprocessing workers). Increased mortality from leukemia (14 observed vs 7.3 expected) and from emphysema (22 observed vs 11.0 expected) was present among men employed in the back processing section. Examination of mortality from these causes according to age and the yr starting work, duration of employment, and yr since starting work in the relevant sections of the processing division suggested that observed excesses of stomach cancer, large intestine cancer, leukemia, and emphysema among processing workers are related to occupational exposures. These results are consistent with the findings of studies of other groups of rubber workers. (Author abstract) (20 Refs)

28. ADENOCARCINOMA OF THE PARANASAL SINUSES IN TASMANIA.

Franklin CI
Peter MacCallum Clinic, Hobart, Tasmania
Australas Radiol; 26(1):49-52 1982

A survey was made of all the hospital records in Tasmania of cases of tumor of the paranasal sinuses presenting between 1966 and 1978 inclusive. Twenty cases were discovered, of which 13 were adenocarcinoma. Of the 13 cases of adenocarcinoma, 9 were woodworkers, and another worked with wood as a hobby. None of the other patients were woodworkers. Assuming 4,000 people are at risk per annum, this incidence is 250 per million per annum, against an expected of not more than 10 per million per annum. Radiotherapy has been the mainstay of treatment, with doses ranging from 57 Gray in 26 fractions over 6 wk to 60 Gray in 18 fractions over 4 wk. Those that have done best have had about 60 Gray over 6 wk, followed by major surgical resection. Survival is poor, with 50% survival at 2 yr. There is an extremely high incidence of adenocarcinoma involving the ethmoids and upper antrum in Tasmania. This is confined almost exclusively to men working in the timber industry. The prognosis is poor, but a combination of radiotherapy and surgery offers the best chance of cure. (Author abstract) (5 Refs)

29. NASAL CARCINOMA IN WOODWORKERS: A REVIEW.

Wills JH
Sch. Medicine, Uniformed Services Univ. Health Sciences, 4301 Jones Bridge Road, Bethesda, MD, 20814
JOM; 24(7):526-530 1982

Analysis of data from 12 countries revealed that 61.3% of cases of primary cancer of the upper respiratory tract, and 78.5% of those classified as adenocarcinoma, observed in areas in which furniture making or other manipulation of wood was an important occupation, had occurred in woodworkers. Machine sanding of hardwoods may entail an especially high risk of development of cancers within the sinonasal area. The data suggest that, although the mean period of latency for development of sinonasal cancers is of the order of 40 to 45 yr, the period of exposure to wood dust that may result in the development of mucosal neoplasms may be considerably shorter. (Author abstract) (64 Refs)

30. CHROMOSOME PATTERN, OCCUPATION, AND CLINICAL FEATURES IN PATIENTS WITH ACUTE NONLYMPHOCYTIC LEUKEMIA.

Mitelman F, Nilsson PG, Brandt L, Alimena G, Gastaldi R, Dallapiccola B
Dept. Clinical Genetics, Univ. Hosp., S-221 85 Lund, Sweden
Cancer Genet Cytogenet; 4(3):197-214 1981

Chromosome banding pattern of bone marrow cells, cell morphology according to the FAB classification, and clinical findings were compared in two groups of adult patients with acute nonlymphocytic leukemia (ANLL): 52 patients occupationally exposed to chemical solvents, insecticides, or petrol products, and 110 patients with no history of occupational exposure to potential mutagenic/carcinogenic agents. Striking differences were found between the two groups: (1) Clonal chromosomal aberrations were present in 75% of exposed patients compared with only 32% in the nonexposed group. (2) Of the patients exposed to solvents and insecticides 92% had abnormal chromosomes, wheres only 29% of patients exposed to petrol products showed abnormalities; in the total material

10/13 exposed patients with normal chromosomes were exposed to petrol products. (3) The relationship between chromosomal abnormality and exposure was evident in both females and males. However, only 29% of women with an abnormal karyotype were exposed, whereas 70% of males with an abnormal karyotype were exposed. (4) The incidence of certain characteristic karyotypic abnormalities, ie,-5/5q-,-7/71-, +8, +21, t(8;21), and t(9;22), were decidedly more common in exposed than in nonexposed patients. At least one of these changes were present in 92% of exposed patients with aberrations, whereas in the nonexposed group the incidence was only 60%. (5) The monocytic varieties of ANLL (M4 + M5) were more common in the nonexposed patients, whereas erythroleukemia (M6) was more common in the exposed group. The predominance of abnormal karyotypes in the exposed compared to the nonexposed patients was similar in leukemia types M1 + M2 and in M4 + M5. (6) There was no difference in survival time between the two groups and the same correlation was obvious in both exposed and nonexposed patients: patients who had only abnormal metaphases had poorer prognosis than those with normal bone marrow metaphases only (6 vs 1.5 mo). This correlation was obvious in patients classified as acute myeloid leukemia (AML) as well as in the monocytic varieties of ANLL. (Author abstract) (36 Refs)

31. DEVELOPMENT OF A BIOLOGICAL SCREENING METHOD TO DETECT POTENTIAL EXPOSURE OF SYNFUEL PLANT WORKERS TO CARCINOGENIC SUBSTANCES.

Hannan MA, Recio L, Enoch HG, Hill RH
Kentucky Dept. Energy, Lexington, KY
Development of a Biological Screening Method to Detect Potential Exposure of Synfuel Plant Workers to Carcinogenic Substances. Available from National Technical Information Service, Springfield, VA, as PB82-192709:, 84 pp., 1981.

The purpose of this project was to determine the feasibility of using the Ames assay as a biological monitoring tool to evaluate exposure to mutagens/carcinogens, which may be possibly generated by a synfuel plant. Phase I of this project consisted of analyzing urine samples of cigarette smokers and non-smokers for mutagenicity in order to establish that this assay can reproducibly detect mutagens present in smokers' urine, as well as to distinguish smoking-related mutagenic urine samples from work-related ones. This was necessary to develop a standardized protocol for urine screening. Phase II consisted of an extension of Phase I to examine mutagen activity as cake-oven workers, exposed to known carcinogens and known to have increased cancer risks. Phase II consisted of an analysis of mutagenic activity in urine samples from volunteer workers at the H-coal pilot plant at Catlettsburg, KY. (Author abstract)

EPIDEMIOLOGICAL FINDINGS INVOLVING SPECIFIC AREAS

32. DEVELOPMENT, LIFE STYLES AND ONCOGENIC HAZARDS.

Ramalingaswami V
Indian Natl. Science Acad., Delhi, India
Indian J Cancer; 19(2):65-70 1982

Variations in incidence of some cancers in different societies indicate that there are important environmental factors in their causation, such as cancers of the uterine cervix and esophagus in Asia. Factors such as tobacco smoking, community participation, industrialization, and investigation of epidemics due to unusual circumstances (aflatoxin poisoning) are discussed. Developing countries carry a double burden of poor health conditions while at the same time developing new health problems due to industrialization. (15 Refs)

33. URBANIZATION AND LUNG CANCER: A QUANTITATIVE AND QUALITATIVE ASSESSMENT OF THE URBAN FACTOR.

Borch-Johnsen K
Cancerregisteret, Strandboulevarden 49, DK-2100 Copenhagen 0, Denmark
Ugeskr Laeger; 144(23):1713-1718 1982

Statistical data on smoking habits of three generations of men born between 1894-1923 and lung cancer incidence rates between 1968-1977 were analyzed to assess the contribution of smoking and other factors to the urban factor. The percentages of pipe and cigar smokers in Copenhagen were 54.7%, 46.1% and 39.4% for the generations born 1894-1903, 1904-1913 and 1914-1923, respectively. The corresponding percentages for men living in rural areas were 70%, 65% and 64.9%, respectively. The percentages of men smoking 1-15 cigarettes/day were 15.8%, 24.5% and 26.5% in Copenhagen and 4.5%, 11.9%, respectively, in rural areas. The percentages of men smoking 16 and more cigarettes were 12.8%, 14.8% and 20.5% in Copenhagen and 1.2%, 3.6% and 4.6%, respectively, in rural areas. The annual lung cancer incidence rates per 100,000 men were 766.4, 478.1 and 170.1 in Copenhagen and 222.4, 197.8 and 83.9, respectively, in rural areas for the three respective generations. The data indicate that the risk of lung cancer in Copenhagen is by 10-40% and 50-140% higher than would be anticipated on account of the smoking habits in the youngest (1914-1923) and oldest (1894-1903) generations, respectively. The difference in smoking habits between men in Copenhagen and men in rural areas is thus insufficient to explain the difference in the lung cancer incidence. Occupational factors are believed to have a greater contribution to the urban factor than diffuse environmental factors among other components of the urban factor after elimination of smoking. (15 Refs) (In DAN)

34. BRONCHOGENIC CARCINOMA IN NORTHERN INDIA.

Jindal SK, Malik SK, Dhand R, Gujral JS, Malik AK, Datta BN
(c/o Malik) Dept. Chest Diseases, Postgraduate Institute Medical Education and Res., Chandigarh-160012, India
Thorax; 37(5):343-347 1982

A study of 336 patients with bronchogenic carcinoma was carried out in Chandigarh, Northern India. The findings suggest that its epidemiology differs in several respects from that in Western countries. Almost a third of all patients and 94.4% of the 54 women had never smoked. The peak frequency of bronchogenic carcinoma occurred between the ages of 51 and 60 yr, 14.6% of the patients being aged less than 41 yr. Of the 232 smokers and ex-smokers, 48.3% had smoked only cigarettes, 28.4% only bidis (made of naturally cured tobacco), 19.8% both cigarettes and bidis, and 3.4% hukkas. There was a clear association between duration of smoking and frequency of carcinoma. Tumors were classified in 287 (85%) of the patients. Squamous-cell carcinoma was relatively more frequent (32.4%) than any other tumor type and occurred almost exclusively in smokers. Adenocarcinoma was found in 13.2% of pa-

tients and was the most frequent tumor in non-smokers. No differences of histological type were found between cigarette smokers and bidi smokers. (Author abstract) (29 Refs)

35. MELANOMA.

Clarke AM
Otago Univ. Medical Sch., Dunedin, New Zealand
NZ Med J; 95(705):221-222 1982

Melanoma in New Zealand, is discussed with respect to incidence, etiology, histological types, treatment, melanomas in special situations, and prevention. Suspicious moles should be excised completely and submitted for histologic examination. Use of New Zealand, with its isolated, relatively steady population, for epidemiologic studies of disease patterns and melanoma is suggested. (22 Refs)

36. TRENDS IN CANCER INCIDENCE: CAUSES AND PRACTICAL IMPLICATIONS. PROCEEDINGS OF A SYMPOSIUM HELD OSLO, NORWAY, 6-7 AUGUST 1980.

Magnus K
The Cancer Registry Norway, Montebello, Oslo 3, Norway
Trends in Cancer Incidence: Causes and Practical Implications, Proceedings of a Symposium held Oslo, Norway, 6-7 August 1980. Washington, D. C., Hemisphere Publishing Corporation, 446 pp., 1982.

Time trends in cancer incidence are described and analyzed. Methodological aspects reviewed include a description and reliability of trends in cancer incidence (Arcadian normal; problems in cancer incidence trends in the United States; time trends, cohort effects, and aging as influencing factors; concurrent trends in etiological research) and implications of trends in cancer incidence (interrelationships of incidence, survival, and mortality and their effects on time trends; time trends as indicators of etiology; prediction of cancer incidence based on cohort analysis; prediction of cancer incidence by utilization of risk factors and the effect of intervention). Incidence trends of stomach cancer in the five Nordic countries, in Osaka, in the United States, and the recession of stomach cancer are discussed. Cancer of the larynx and lung are discussed with respect to incidence trends and alcohol consumption and tobacco usage, recent changes in pattern of occurrence of oat cell carcinoma of the lung, and trends of mortality from lung cancer in women. Breast cancer incidence trends in Nordic countries, in North America, Japan, and Hawaii, and in Europe and Israel, and during a course of periodic screening are reviewed. Trends of uterine cervical cancer are reviewed for the Nordic countries, Sweden, Iceland, and Canada. Trends in prostatic cancer in Nordic countries and in the Americas are discussed. Malignant melanoma of the skin is discussed with respect to time trends, and incidence trends in the Nordic countries, Finland, Australia, and Israel. (470 Refs)

37. A COMPARISON OF CANCER MORTALITY RATES IN SOUTH AFRICA WITH THOSE IN OTHER COUNTRIES.

Bradshaw E, Harington JS
Cancer Res. Dept., Natl. Cancer Assoc. South Africa, Johannesburg, South Africa
S Afr Med J; 61(25):943-946 1982

Standardized mortality rates for eight major types of cancer (as well as for all types of cancer considered together) in four South African population groups are compared with each other and with rates in selected countries. Wide differences among the races in South Africa are displayed, and several rates are shown to parallel those in other population groups abroad. This lends support to the belief that socioeconomic factors (rather than solely genetic factors) play the major role in cancer causation. (Author abstract) (13 Refs)

38. EPIDEMIOLOGY OF ESOPHAGEAL CANCER IN SAO PAULO, BRASIL.

Mirra AP, Pacheco de Souza JM, Gotlieb SL, Pastorelo EF, Bussacos MA, Da Motta Azevedo Correa MC, Haenszel W, Correa P
Departamento de Epidemiologia da Faculdade de Saude, Registro de Cancer de Sao Paulo, USP, Av. Dr. Arnaldo, 715, 01255 Sao Paulo, Brasil
Rev Saude Publica; 16(1):54-65 1982

The incidence by age, sex and birthplace of esophageal cancer in Sao Paulo in 1975 was compared with that of 1969, in the rest of Brasil and other countries. The Cancer Registry shows that of the 243 recorded cases of esophageal cancer in Sao Paulo in 1975, 200 were males and 43 were females. This is a male:female incidence ratio of 4.6. The other major Brazilian cities, Recife, Rio Janeiro and Fortaleza have a lower male:female incidence ratio: ranging from 1.6 to 3.3. The increased immigration into Sao Paulo from Portugal, Italy, Spain and Japan could contribute to this significant difference between Brazilian cities. The male:female ratio remains high for native citizens of Sao Paulo when birthplace is considered although the incidence rate is less overall for natives vs immigrants. There is a higher risk for immigrants to Sao Paulo of contracting esophageal cancer than for locally born citizens. This is also linked to age, those over 50 yr old, and sex, higher for males, for natives as well as immigrants. Therefore, the etiology can not be a general one of social structure, stress or malnutrition among immigrants. The increased risk factor for Sao Paulo as compared to the rest of Brasil and in some other countries must be due to something specific to the city of Sao Paulo. Future Cancer Registry information will include the date of arrival and length of stay in the city for immigrants and the exact birthplace for each cancer patient. (15 Refs) (In POR)

39. CANCER MORTALITY IN THE UNITED STATES: 1950-1977.

McKay FW, Hanson MR, Miller RW
Clinical Epidemiology Branch, Field Studies and Statistics Program,, Div. Cancer Cause and Prevention NCI, NIH, Bethesda, MD, 20205
Natl Cancer Inst Monogr; (59):1-475 1982

Tabular and graphical analyses, summary statistics, and absolute numbers of deaths and population estimates for calculations of rates are presented to show national trends in site-specific mortality by age, sex, and race. Three-dimensional charts are provided to enable the reader to visualize the contribution of individual age-at-risk and birth cohort groups to mortality trends over time. (no Refs)

40. OCCUPATION AND THE HIGH RISK OF LUNG CANCER IN NORTHEAST FLORIDA.

Blot WJ, Davies JE, Brown LM, Nordwall CW, Bulatti E, Ng A, Fraumeni JF
Analytical Study Section, Environmental Epidemiology Branch, Landow Building, Room 3C07, Bethesda, MD, 20205
Cancer; 50(2):364-371 1982

A case-control study involving interviews with 321 male patients with lung cancer and 434 controls, or their next of kin, was undertaken to identify reasons for the high lung cancer mortality along the northeast coast of Florida. In Duval

County (Jacksonville), the age-adjusted rate for lung cancer, 1970-1975, among white males was the highest of all urban counties in the United States. Increased risks on the order of 40-50% were associated with employment in the shipbuilding, construction, and lumber/wood industries, particularly among workers with reported exposures to asbestos or wood dust. Excess risks were also linked to fishing and forestry occupations, although the numbers of cases involved were small. Occupational factors did not appear to fully account for the area-wide excess of lung cancer, but no evidence was found to implicate smoking habits, migration patterns, or diagnostic and reporting practices as factors responsible for the exceptional mortality rates. (Author abstract) (36 Refs)

OTHER EPIDEMIOLOGICAL FINDINGS

41. THE SYNDROME OF KAPOSI'S SARCOMA AND OPPORTUNISTIC INFECTIONS: AN EPIDEMIOLOGICALLY RESTRICTED DISORDER OF IMMUNOREGULATION.

Fauci AS
NIH, Bethesda, MD
Ann Intern Med; 96(6,part1):777-779 1982

Topics considered in relation to the syndrome of Kaposi's sarcoma and opportunistic infections include the following: selective depletion of the inducer T cell subset; the complexity of the syndrome as indicated by the finding of a significant elevation of the frequency of human WBC antigen-DR5 haplotype in homosexual as well as nonhomosexual men with Kaposi's sarcoma; geographic clustering of cases in the New York City, Los Angeles, and San Francisco; baseline immune status of affected individuals; and therapy. (14 Refs)

42. BREAST CANCER EPIDEMIOLOGY AT PRESENT.

Morales S A
Epidemiolgo del Servicio de Salud Norte y del Ministerio de Salud, Chile
Bol Hosp San Juan Dios; 29(1):16-23 1982

Data from the early 1900's to the present on various epidemiological factors relating to breast cancer are studied. Menarche at an early age is considered a protective factor and prolonged use of estrogens a risk factor. Women who are multiparous and experience their first term pregnancy before the age of 24 yr are less likely to develop breast cancer. The role of breast-feeding as a protective factor was found to be secondary to the significance of the age at first pregnancy. There is a protective factor in early menopause. A small proportion of breast cancers found within families has been related to an autosomal dominant gene on Chromosome 10. Diets high in saturated fats and body surface measurements are risk factors. Socioeconomic factors, use of hair dyes, and exposure to ionizing radiation were also considered. The highest occurrence rate was found in the United States, Canada, and Northeastern Europe. In Chile, the mortality rate of breast cancer as compared to all other cancer mortalities is 5%. The highest occurrence rate is in the cities. (15 Refs) (In SPA)

43. EPIDEMIOLOGY OF BREAST CARCINOMA III: RELATIONSHIP OF FAMILY HISTORY TO TUMOR TYPE.

Rosen PP, Lesser ML, Siene RT, Kinne DW
Memorial Sloan-Kettering Cancer Center, 1275 York Ave., New York, NY, 10021
Cancer; 50(1):171-179 1982

Previous breast carcinoma in at least one female relative was reported by 31% of 1,024 women treated consecutively for breast carcinoma at Memorial Hospital. Eighty (7.9%) of their mothers had had breast cancer. Maternal breast cancer was significantly (p less than 0.006) more frequent among women with medullary carcinoma than those with other tumor types and among those who were pre- or perimenopausal at diagnosis (p less than 0.001). Among the 727 patients who had one or more sisters, 12% had a sister who had been treated for breast cancer. The highest frequency of carcinoma in at least one sister occurred in patients with lobular carcinoma while the medullary carcinoma group had the least number of patients with an affected sister (p less than 0.03). Occurrence of breast cancer in a sister was almost twice as common in patients who were postmenopausal at diagnosis (p less than 0.005) than in premenopausal patients. When stratified by histologic type, the mean age at diagnosis of the patients did not differ appreciably from the age at diagnosis of their sisters. Detailed analyses of histologic type and other more distant familial relationships were also obtained but were considered to be less reliable because of problems in ascertainment and there were fewer affected relatives. No single histologic type of carcinoma was consistently linked to a disproportionately high or low frequency of carcinoma in all classes of relatives. It is possible that studies of family history limited to information available when the patient is first treated present an incomplete picture of familial aggregation. Further follow-up after diagnosis is needed to obtain a more reliable measure of the extent to which relatives are affected by breast cancer and patterns of family distribution associated with specific tumor types. (Author abstract) (16 Refs)

44. GENETIC/EPIDEMIOLOGICAL FINDINGS IN A STUDY OF SMOKING-ASSOCIATED TUMORS.

Lynch HT, Fain PR, Albano WA, Ruma T, Black L, Lynch J, Shonka M
Dept. Preventive Medicine and Health, Creighton Univ. Sch. Medicine, 2500 California Street, Omaha, NB, 68178
Cancer Genet Cytogenet; 6(2):163-169 1982

While the etiology of bronchogenic carcinoma remains enigmatic, an expanding array of carcinogenic pollutants in interaction with host susceptibility factors has been implicated. We have studied family histories of cancer in a consecutive series of cancer patients from two university oncology clinics in Nebraska. Particular attention has been given to carcinoma of the lung and other putative smoking-associated cancers (oral cavity, esophagus, urinary bladder, pancreas). Smoking histories were obtained for relatives of an overlapping series of patients with these tumor sites. Findings revealed that, although a significant cohort effect was observed with respect to smoking habits for both relatives of lung cancer probands and for relatives of probands with other smoking-associated tumors, a corresponding trend for lung cancer frequency was observed only for relatives of lung cancer probands. This result suggests the importance of host factors in combination with environmental exposures in determining lung risk. A cohort trend for lung cancer was also apparent among relatives of breast cancer probands, but not for relatives of colon cancer probands, suggest-

ing the possibility of an intrinsic association between carcinomas of the breast and lung. We believe that further elucidation of host factor susceptibility in lung cancer may have important etiological and preventive implications. (Author abstract) (38 Refs)

45. FAMILIAL RESPIRATORY CARCINOMA: ECOGENETICS OF LUNG CANCER (MEETING ABSTRACT).

Goffman TE, Hassinger DD, Mulvihill JJ
Clinical Epidemiology Branch, National Cancer Institute, Bethesda, MD, 20205
Proc Am Soc Clin Oncol; 1:C-873 1982

Two families with excessive respiratory tract cancers underwent comprehensive evaluation including physical examination, routine laboratory studies, pulmonary function studies, sputum cytologic analysis, assay for quantitative immunoglobulins, tumor markers and lymphocyte karyotyping. In both families, the influences of smoking and, to a lesser extent, occupational exposures were evident risks. Both familes had members with multiple primary cancers and radiogenic tumors in young members, suggestive of inherent predisposition to environmentally induced neoplasia. Further, Family B had a newly recognized syndrome of limb and dental anomalies; and, independently, two members were carriers of a balanced translocation between chromosomes 13 and 14. Effects were made to prevent further respiratory tract cancer deaths, to search for laboratory markers of risk, and to store blood and tissue specimens for assays in development. (no Refs)

46. PRENATAL FACTORS IN THE AETIOLOGY OF TESTICULAR CANCER: AN EPIDEMIOLOGICAL STUDY OF CHILDHOOD TESTICULAR CANCER DEATHS IN GREAT BRITAIN, 1953-73.

Swerdlow AJ, Stiller CA, Wilson LM
Oxford Regional Health Authority, Birmingham, England
J Epidemiol Community Health; 36(2):96-101 1982

A case-control study of 87 reported deaths of boys from testicular cancer between 1953 and 1973 is presented. A peak of childhood testicular cancer mortality was found at age 2 yr and a sharp rise was seen at age 15 yr. Risk of testicular cancer was not significantly related to social class or age of parents at the patient's birth. Relative risk increased for boys of mothers who had a previous stillbirth, however this increase was not statistically significant. Significantly raised risks were found for boys of mothers with tuberculosis during pregnancy or epileptic mothers. Both epileptic mothers were taking phenobarbitone during the index pregnancy and one was also taking phenytoin. Significantly increased risks were also seen for boys whose mothers had cystitis in pregnancy; however, the raised risk was less and nonsignificant for any urinary tract infection recorded during pregnancy, which were cystitis or renal infections. Other factors with raised, but not significantly, risks were hyperemesis in the index pregnancy and hernia and genitourinary defects in the child. While the incidence and mortality from testicular cancer in children are not increasing in Britain and other countries, an increasing trend has been reported in young adults in several developed countries. The secular increase in the rates of young adult testicular cancer may be due to factors that affect adults but not children, and are most likely prenatal. (27 Refs)

47. ENDOGENOUS HORMONES AS A MAJOR FACTOR IN HUMAN CANCER.

Henderson BE, Ross RK, Pike MC, Casagrande JT
Dept. Family and Preventive Medicine, Univ. Southern California Sch. Medicine, Los Angeles, CA, 90033
Cancer Res; 42(8):3232-3239 1982

Hormone-related cancers account for almost 30% of all cancer cases in the United States. Data from animal experiments and from epidemiological and endocrinological studies in humans support the hypothesis that the individual hormones which control normal growth of target organs can also create the proper conditions for neoplastic transformation. The concept that hormones can cause, ie, increase the incidence of, human cancer is most developed for the four hormone-related cancers which are numerically the most important, namely, breast, prostate, endometrium, and ovary. Even for these sites, large gaps remain in our knowledge of the responsible hormones and the conditions which create the optimal opportunity for carcinogenesis. Although scanty, the available epidemiological evidence also suggests a hormonal role in the pathogenesis of testis cancer, thyroid cancer, and osteosarcoma. We believe that the primary prevention of all these cancers will probably depend on modification of the factors which affect the secretion and metabolism of the responsible hormones rather than on control of exposure to classical exogenous initiators. (Author abstract) (129 Refs)

VIRAL FACTORS INVOLVING ENVIRONMENTAL AND OCCUPATIONAL EXPOSURE

48. WORKSHOP ON KAPOSI'S SARCOMA: MEETING REPORT.

DeWys WD, Curran J, Henle W, Johnson G
Clinical Investigation Branch, NCI, Landow Building, Room 4A04, Bethesda, MD, 20205
Cancer Treat Rep; 66(6):1387-1390 1982

Occurrence, epidemiology, virology-etiology, and treatment of Kaposi's sarcoma (KS) are reviewed. A clustering of cases of KS in homosexual men (HM) in New York City and California was reported; 55 patients with KS, 49 with Pneumocystis carinii pneumonia (PCP), and 11 with both diseases, either concurrently or sequentially. All patients were men, 94% of whom were homosexual or bisexual. Eighty percent of these patients were between 25-45 yr old. A national case/control study of KS and/or PCP among HM will be conducted by Centers for Disease Control, and laboratory studies coordinated with the study would be desirable. Of primary importance is the collection of appropriate, well-characterized specimens from KS patients and controls in a coordinated manner. Aliquots of specimens would be tested in several laboratories by possibly different techniques permitting comparison and correlation of results. The specimens to be collected include biopsy material (frozen or fresh) and sera. The virus-specific antibody spectrum and titers should be determined for patients with primary or recurrent cytomegalovirus infections, healthy or immunologically compromised carriers of the virus, and KS patients at various stages of the disease. Careful evaluation of the immune reactivities of KS prior to therapy and continuing thereafter is considered essential. In addition to identifying various types of leukocytes by monoclonal antibodies, their functional state must also be ascertained. A general format for any

prospective study was proposed. Components of the protocol would include eligiblity, pathology confirmation, staging, immunologic evaluation, infection prophylaxis, and treatment. Treatment assignment should be based on the patient's clinical stage of disease as defined. Possible regimens are based on cumulative experience with KS and pilot studies currently in progress. (4 Refs)

49. THE HLA SYSTEM IN PATIENTS WITH KAPOSI'S SARCOMA (MEETING ABSTRACT).

Walker M, Rubinstein P, Carrier C, Carpenter C, Krassner J, Friedman-Kien A
The Lindsley F. Kimball Research Institute, New York, NY
Eighth Annual Meeting of the American Association for Clinical Histocompatibility Testing, April 25-29, 1982, San Francisco, California. American Association for Clinical Histocompatibility Testing, 41 pp., 1982.

Classical Kaposi Sarcoma (KS) is an infrequent malignancy with characteristically slow and indolent progress in Causcasians. It affects mostly elderly Jewish and Italian males. Cytomegalovirus has been recovered from KS cells of African patients. Recently, an epidemic of KS has been declared affecting male homosexuals in the USA among whom it is much more malignant. We report here on a sample of 30 young homosexual males from New York City studied for 16 HLA-A, 27 HLA-B, 7 HLA-C and 10 HLA-DR antigens. A group of 13 patients with the classical form of KS were similarly typed. A 'control' sample of 26 patients with polyadenopathy but without KS from the homosexual community in New York is also included. All these individuals have been additionally studied for responsiveness to mitogens and allogeneic lymphocytes, for skin reactivity in delayed hypersensitivity and for the serum levels of immunoglobulins and immune complexes. The three samples differ only in the frequency of antigen DR5: 60% in the 'young KS' and 62% in the 'classical KS' vs 23% in the 'controls'. The two samples of KS patients do not differ from each other in HLA frequencies; the 'controls' do not differ from the frequencies found in 231 'normal' New York Caucasians. The X2 for the differences in the frequency of DR5 between all 43 KS patients (61%) and the 231 'normals' (23.4%) is 24.12. This difference is significant after correction for 60 antigens. These results suggest the existence of HLA-associated genetic susceptibility to KS that may be triggered by environmental factors which determine, also the clinical aspects and degree of malignacny of the disease. (no Refs)

50. HLA STUDIES IN A EPIDEMIC OF KAPOSI'S SARCOMA AND OPPORTUNISTIC INFECTIONS (KS/OI) AMONG HOMOSEXUAL MALES (MEETING ABSTRACT).

Lawrence D, Bias W, Pollard K, Spira T, Curran J
Centers for Disease Control, Atlanta, GA
Eighth Annual Meeting of the American Association for Clinical Histocompatibility Testing, April 25-29, 1982, San Francisco, California. American Association for Clinical Histocompatibility Testing, 41 pp., 1982.

Kaposi Sarcoma is traditionally thought of as a malignancy of the elderly or as a prevalent childhood malignancy of Africa. It is now occurring throughout the USA as an epidemic of immunosuppression among young and middle-age homosexuals. Overall mortality is at least 42%. Comprehensive epidemiologic and laboratory investigation have begun between the CDC and many collaborators. To date, of the more than 200 cases identified, specimens have been submitted for HLA typing from 30 (7 of whom are black). Twenty-two (6 black) have been successfully typed for A, B, and C locus antigens and 12 (1 black) for DR. The presence of an aberrant lymphocyte population (Sig +, not sensitive to anti-Ia/Dr antisera) and profound lymphopenia have complicated the typing. Results of typings from controls (persons of similar sexual preference, and similar epidemiologic background but without KS/OI) have just begun. Among our cases there is as yet no significant increase in any single DR or ABC locus antigen. The results, however, are interesting in that HLA may play a valuable role as a population marker of disease association. Contrasting our results, by race, to phenotype frequencies of North American caucasoids and blacks, we find a distinct trend toward an excess of Bw44 in both races. The concurrent excess of A2 and A29 among our cases is probably explained by the well-known linkage disequilibria between these A locus antigens and Bw44 since all but one of the nine Bw44 persons also had A2 and/or A29. Analysis of intra-European frequencies for these antigens suggests a relatively greater frequency for Bw44 in 2 foci: 1 in or near Austria and another in populations bordering the English Channel/North Sea. The same is true for European foci with significant link-disequilibria for A29, Bw44 and A2, Bw44 haplotypes. Preliminary analysis of CDC epidemiologic data on ethnic origens of the KS/OI cases suggests unequal representation, supporting the above immunogenetic analysis. In this study of KS, Rubenstein found an excess of DRw5, another antigen with a European focus near Austria, the region from which KS was originally described. (no Refs)

PUBLIC POLICY INVOLVING ENVIRONMENTAL AND OCCUPATIONAL CARCINOGENS

51. MEDICAL RECOMMENDATIONS FOR DEALING WITH UV RADIATION.

Barth J, Haustein L
Klinik und Poliklinik fur Hautkrankheiten des Bereichs Medizin, Karl-Marx-Universitat Leipzig, Liebigstrasse 21, DDR-7010 Leipzig, E. Germany
Wiss Z Karl Marx Univ [Math Naturwiss]; 30(5):469-472 1981

An increasing number of workers are exposed to UV radiation, particularly from artificial sources. Recommendations for dealing with UV exposure should be formulated. The primary targets of UV are the skin and eyes. Acute effects must be differentiated from chronic effects. Exposure to UV can be minimized by proper construction of work facilities and use of special clothing and eye protection. Safety standards for exposure to different wavelengths of radiation are discussed. (5 Refs) (In GER)

ANALYTICAL AND METHODOLOGICAL ASPECTS OF CANCER EPIDEMIOLOGY

52. MOLECULAR EPIDEMIOLOGY AND CARCINOGEN-DNA ADDUCT DETECTION: NEW APPROACHES TO STUDIES OF HUMAN CANCER CAUSATION.

Perera FP, Weinstein IB
Div. Environmental Sciences, Columbia Univ., New York, NY, 10032
J Chronic Dis; 35(7):581-600 1982

Techniques with potential usefulness in molecular cancer epidemiology are reviewed, with special emphasis placed upon

a highly sensitive assay that detects covalent binding of the polycyclic aromatic hydrocarbon benzo(a)pyrene to human DNA. Benzo(a)pyrene has assumed considerable importance among chemical carcinogens because it has proven carcinogenic potency in a variety of species and tissues, it is ubiquitous in the environment, and there is extensive information regarding its metabolism and mode of action. Laboratory methods applicable to molecular cancer epidemiology include techniques to assess specific host factors that may influence susceptibility to carcinogens; assays that detect carcinogens in human tissues, cells, or fluids; assays at the cellular level of biologically effective doses of carcinogens; and methods to measure early biologic and biochemical responses to carcinogenic agents. Inherited and acquired host factors that may influence human susceptibility to carcinogens, methods for detecting and quantitating chemical carcinogens in human tissues or body fluids, markers for assessing the biologically effective dose of carcinogens in humans, potential markers for early biological and biochemical response to carcinogens in humans, and the immunoassay of benzo(a)pyrene-DNA adducts as an example of a promising marker in molecular cancer epidemiology are among topics discussed. (229 Refs)

GENERAL AND MISCELLANEOUS FACTORS

53. IARC MONOGRAPHS ON THE EVALUATION OF THE CARCINOGENIC RISK OF CHEMICALS TO HUMANS: SOME AROMATIC AMINES, ANTHRAQUINONES AND NITROSO COMPOUNDS, AND INORGANIC FLUORIDES USED IN DRINKING-WATER AND DENTAL PREPARATIONS.

IARC Working Group
International Agency for Research on Cancer, Lyon, France
IARC Monogr Eval Carcinog Risk Chem Hum; 27:1-7 1982

Monographs on carcinogenicity data for groups of chemicals to which humans are known to be exposed are presented, and some aromatic amines and anthraquinones (used mainly as dyestuff intermediates), two nitroso compounds, and inorganic fluorides used in the fluoridation of drinking water or in dental preparations are included. The importance of data on the purity of chemicals used in animal carcinogenicity experiments and in mutagenicity tests was emphasized. Aromatic amines discussed include aniline and aniline hydrochloride, ortho-anisidine and para-anisidine and their hydrochlorides, 4-chloro-ortho-phenylenediamine and 4-chloro-meta-phenylenediamine, meta-cresidine and para-cresidine, 2,4-diaminoanisole and 2,4-diaminoanisole sulfate, 4,4'-methylenebis(N,N-dimethyl)benzenamine, 1,5-naphthalenediamine, 2,2',5,5'-tetrachlorobenzidine, 4,4'-thiodianiline, ortho-toluidine and ortho-toluidine hydrochloride, and 2,4,5-trimethylaniline and 2,4,6-trimethylaniline and their hydrochlorides. Anthraquinones include 2-aminoanthraquinone, 1-amino-2-methylanthraquinone, and 2-methyl-1-nitroanthraquinone. Nitroso compounds include N-nitrosodiphenylamine and para-nitrosodiphenylamine. An appendix on the epidemiological evidence relating to the possible carcinogenic effects of hair dyes in hairdressers and users of hair dyes is included. Critical analyses of the data presented are made in order to assist national and international authorities in formulating decisions concerning preventive measures. (744 Refs)

54. SECOND ANNUAL REPORT ON CARCINOGENS.

National Toxicology Program
(S. d'Arazien) Public Information Office, Natl. Toxicology Program, MD B2-04, P.O. Box 12233, Research Triangle Park, NC, 27709
Second Annual Report on Carcinogens. Washington, D. C., National Toxicology Program, 447 pp., 1981.

Information on the nature and degree of exposures to substances which are either known to be carcinogens and to which a significant number of persons residing in the United States are exposed and the extent to which Federal regulations are effective in reducing the risk to the public health from exposures to these chemicals are presented. Substances to which only a few people are exposed, for the most part are not included. Some chemicals have been included that have been banned or whose use has been restricted because people previously exposed who are potentially at risk are still living, or because some of these chemicals still remain in the environment. Eighty-eight chemicals, including 25/26 from the First Annual Report are presented; chloramphenicol has been dropped because strength of evidence of human data is inadequate and no data on experimental animals exist. Each chemical is described, including a brief synopsis of the scientific evidence concerning carcinogenicity. Two of the chemicals, aflatoxin and cycasin, occur naturally. Two food or cosmetic additives with the potential for major use and exposure are saccharin and safrole. Fourteen pharmaceuticals include six anticancer drugs. Eight pesticides have been included. The other chemicals are industrial chemicals, miscellaneous chemicals and analogs, or industrial processes or byproducts. Appendixes of individual chemicals and their synonyms, acronyms, and measurements are presented. (no Refs)

55. GUIDELINES FOR STUDIES OF HUMAN POPULATIONS EXPOSED TO MUTAGENIC AND REPRODUCTIVE HAZARDS. PROCEEDINGS OF A CONFERENCE HELD IN WASHINGTON, D. C., 26-27 JANUARY, 1981.

Bloom AD
Dept. Pediatrics and Human Genetics and Development, Coll. Physicians and Surgeons, Columbia Univ., New York, NY
Guidelines for Studies of Human Populations Exposed to Mutagenic and Reproductive Hazards, Proceedings of a Conference held in Washington, D. C., 26-27 January, 1981. White Plains, NY, March of Dimes Birth Defects Foundation, 163 pp., 1981.

Panels were established to study cytogenetic effects of genotoxic chemicals on human populations, reproductive effects of genotoxic chemicals, and testing for mutagens in human populations. Discussion of cytogenetic study guidelines included presentation of background information, methods for study of induced chromosomal aberrations, analysis and classification of chromosomal structural changes, analysis of data on structural aberrations, methods and procedures for analysis of sister chromatid exchange (SCE) in human lymphocytes, and significance of aberrations and SCE. Reproductive study guidelines are considered in relation to indices of reproductive failure, statistical issues, guidelines for Level I activities (accessible sources), decision making (moving from Level I to Level II), long-term follow-up studies (Level III), and data on selected end points. Topics discussed with regard to detection of gene mutation and DNA damage in the human population included the following: background information, the need for genetic monitoring, criteria for defining a human population at risk, methods potentially useful for evaluating human populations exposed to mutagenic hazards, and current status of the use of mutation assays to evaluate human populations. Implementation of the guidelines must consider cost of inadequate evaluations of po-

tential mutagens and teratogens, coordination of the three sets of guidelines, and statistical concerns. (384 Refs)

56. HAZARDS IN THE CHEMICAL LABORATORY.

Bretherick L
BP Res. Centre, Sunbury, England
Hazards in the Chemical Laboratory. London, Royal Society of Chemistry, 567 pp., 1981.

Health and safety at work act 1974, safety planning and management, fire protection, reactive chemical hazards, chemical hazards and toxicology, health care and first aid, hazardous chemicals, and precautions against radiation are discussed. Modern laboratory practice and equipment emphasizing the inseparability of safety from good management are described. Some detail of comprehensive toxicity and carcinogenicity testing currently required for commercial chemicals, and comments on the predictive value of such testing are presented. Mutagens and carcinogens are discussed and sources of information on toxicity and medical emergencies both in the United Kingdom and Europe are provided. The substance monographs and entries have been revised to include new reactive hazards and the modified Council of Europe label warning phrases. A selection of solvents and research reagents which show unusual or unusually hazardous properties is presented. All recognized and suspect human carcinogenic substances are included together with a selection of the more potent experimental animal carcinogens. A brief chemical classification of all the types and references to more detailed sources are given to assist in the general recognition of potential carcinogens. Precautions against radiation are discussed including the major changes considering the European directive and other proposals. (70 Refs)

57. QUANTIFICATION OF OCCUPATIONAL CANCER.

Peto R, Schneiderman M
Nuffield Dept. Clinical Medicine, Radcliffe Infirmary, Univ. Oxford, Oxford, England
Banbury Rep. Issue 9, 756 pp., 1981.

Human exposure to carcinogenic agents was defined and means of preventing such exposure were discussed. Sessions included discussions on asbestos and other mineral fibers (constraints in estimating occupational contributions to current cancer mortality in the United States, proportion of cancer due to exposure to asbestos, cancer among shipyard workers), radiation risks (exposure to ionizing radiation and cancer mortality among workers at the Hanford plant, radon daughters in the induction of lung cancer in underground miners, strategy for the identification of carcinogens in a large chemical company), methodological problems in industry-wide cancer experience (developing protective strategies; mortality studies on lung, pancreas, esophageal, and other cancers in Louisiana; survey of availability of epidemiologic data on humans exposed to animal carcinogens), recent trends in and proportion of occupational cancers in the United States (trends in onset rates, estimating cancer causes), special problems of methodology (holistic approach to monitoring high-risk populations by short-term procedures, industry-sponsored mortality surveillance program), methodology (indicators of exposure trends, epidemiology and occupational classification systems, exposure-based case control approach to discovering occupational carcinogens), broad approaches to occupational cancer quantification (problems in assessing risks from occupational and environmental exposure to carcinogens, differentiating work from life-style in cancer causation), and future needs (record linkage and needed improvements in existing data resources, long-term medical follow-up in Canada). (889 Refs)

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As an additional service to readers of carcinogenesis (CK series) CANCERGRAMS, each issue now provides a bibliography of review articles of interest to carcinogenesis researchers, selected from journals screened for that month's CANCERGRAMS.

CHEMICAL CARCINOGENESIS

1. ASBESTOS CARCINOGENESIS: ASBESTOS INTERACTIONS AND EPITHELIAL LESIONS IN CULTURED HUMAN TRACHEOBRONCHIAL TISSUES AND CELLS.
Haugen A, Harris C
Div. Cancer Cause and Prevention, NCI, Bethesda, MD
Recent Results Cancer Res; 82:32-42 1982

2. REVIEW: ORAL CONTRACEPTIVES AND MENOPAUSAL ESTROGENS IN RELATION TO BREAST NEOPLASIA.
Brzezinski A, Schenker JG
Dept. Obstetrics and Gynecology, Hadassah Univ. Hosp., POB 12000, 91120 Jerusalem, Israel
Isr J Med Sci; 18(4):433-438 1982

3. LIVER DISEASES DUE TO HORMONAL CONTRACEPTIVES.
Lie TS
Chirurgische Klinik und Poliklinik, Universitat, Sigmund-Freud-Str. 25, D-5300 Bonn 1, W. Germany
MMW; 124(20):489-494 1982
In GER

RADIATION CARCINOGENESIS

4. THE WORK OF THE NRPB 1977/80 AND A REVIEW OF THE FIRST 10 YEARS.
National Radiological Protection Board
Natl. Radiological Protection Board, Chilton, Didcot, Oxfordshire OX11 0RQ, England
The Work of the NRPB 1977/80 and a Review of the First 10 Years. Chilton, Didcot, Oxfordshire, National Radiological Protection Board, 70 pp., 1981.

DIETARY FACTORS IN CARCINOGENESIS

5. ALCOHOL AND CARCINOGENESIS.
Seitz HK, Czygan P, Kommerell B
Schwerpunkt Gastroenterologie, Medizinische Universitatsklinik, Bergheimer Str. 58, D-6900 Heidelberg 1, W. Germany
Leber Magen Darm; 12(3):95-107 1982
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6. ZINC, COPPER, AND MANGANESE IN IMMUNE FUNCTION AND EXPERIMENTAL ONCOGENESIS.
Beach RS, Gershwin ME, Hurley LS
Dept. Internal Medicine, Div. Rheumatology-Clinical Immunology, Univ. Calif., Davis, CA, 95616
Nutr Cancer; 3(3):172-191 1982

EPIDEMIOLOGY, ETIOLOGY AND GENETIC ASPECTS OF HUMAN CANCER

7. TRENDS IN CANCER INCIDENCE: CAUSES AND PRACTICAL IMPLICATIONS. PROCEEDINGS OF A SYMPOSIUM HELD OSLO, NORWAY, 6-7 AUGUST 1980.
Magnus K
The Cancer Registry Norway, Montebello, Oslo 3, Norway
Trends in Cancer Incidence. Causes and Practical Implications, Proceedings of a Symposium held Oslo, Norway, 6-7 August 1980. Washington, D. C., Hemisphere Publishing Corporation, 446 pp., 1982.

ENVIRONMENTAL AND OCCUPATIONAL FACTORS IN CARCINOGENESIS

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Peto R, Schneiderman M
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9. NASAL CARCINOMA IN WOODWORKERS: A REVIEW.
Wills JH
Sch. Medicine, Uniformed Services Univ. Health Sciences, 4301 Jones Bridge Road, Bethesda, MD, 20814
JOM; 24(7):526-530 1982

10. AIR POLLUTION AND CANCER. A REVIEW OF EXPERIMENTAL INVESTIGATIONS.
Madsen ES, Nielsen PA, Pedersen JC
(c/o Nielsen), Stigardsvej 2, DK-2900 Hellerup, Denmark
Ugeskr Laeger; 144(23):1719-1721 1982
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11. AIR POLLUTION AS A RISK FACTOR IN LUNG CANCER.
Vena JE
Dept. Social and Preventive Medicine, State Univ. New York at Buffalo, 2211 Main St., Buffalo, NY, 14214
Am J Epidemiol; 116(1):42-56 1982

12. INHALATION CARCINOGENESIS: AN OVERVIEW.
Chretien J
Hopital Laennec, 42 rue du Sevres, F-75007 Paris, France
Recent Results Cancer Res; 82:1-10 1982

13. THE NITROSAMINE HAZARD.
Yonkers AJ
Dept. Otolaryngology, Univ. Nebraska, Omaha, NE
Ear Nose Throat J; 61(7):407-414 1982

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14. ONCOGENES OF SPONTANEOUS AND CHEMICALLY INDUCED TUMORS.
Weinberg RA
Center for Cancer Res., Massachusetts Inst. Technology, Cambridge, MA, 02139
Adv Cancer Res; 36:149-163 1982

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Lipetz PD, Oalsky AG, Stephens RE
Dept. Radiology, Ohio State Univ., Columbus, OH, 43210
Adv Cancer Res; 36:165-210 1982

16. ROLE OF ENZYMATIC METHYLATION OF DNA IN CELL DIFFERENTIATION AND TRANSFORMATION.
Fedorov NA
Central Res. Inst. Hematology and Blood Transfusion, Moscow, USSR
Eksp Onkol; 4(3):3-11 1982
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17. HYDROGEN ION DYNAMICS AND CANCER: AN APPRAISAL.
Harguindey S
Dept. Thoracic Surgery and Oncology, Roswell Park Memorial Inst., 666 Elm St., Buffalo, NY, 14263
Med Pediatr Oncol; 10(3):217-236 1982

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18. CARCINOGENESIS AND BIOLOGICAL EFFECTS OF TUMOR PROMOTERS.
Hecker E
Inst. Biochemistry, German Cancer Res. Center, Heiodelberg, W. Germany
Carcinogenesis 7: 664 pp., 1982.

VIRAL AND IMMUNOLOGICAL ASPECTS OF CARCINOGENESIS

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Graf T, Stehelin D
Inst. Virology, German Cancer Res. Center, In Neuenheimer Feld 280, 6900 Heidelberg, W. Germany
Biochim Biophys Acta; 651(4):245-271 1982

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Scolnick EM
Lab. Tumor Virus Genetics, NCI, Bethesda, MD, 20205
Biochim Biophys Acta; 651(4):273-283 1982

METHODOLOGY IN CARCINOGENESIS RESEARCH

21. MOLECULAR EPIDEMIOLOGY AND CARCINOGEN-DNA ADDUCT DETECTION: NEW APPROACHES TO STUDIES OF HUMAN CANCER CAUSATION.
Perera FP, Weinstein IB
Div. Environmental Sciences, Columbia Univ., New York, NY, 10032
J Chronic Dis; 35(7):581-600 1982

22. AN EVALUATION OF ASSAY PROCEDURES FOR DETECTION OF TUMOR PROMOTORS.
Sivak A
(c/o P. H. Lohman) Medical Biological Lab. TNO, P.O. Box 45, 2280 AA Rijswijk, The Netherlands
Mutat Res; 98(3):377-387 1982

23. DNA REPAIR ASSAYS AS TESTS FOR ENVIRONMENTAL MUTAGENS. A REPORT OF THE U.S. EPA GENE-TOX PROGRAM.
Larsen KH, Brash D, Cleaver JE, Hart RW, Maher VM, Painter RB, Sega GA
Environmental Mutagen Information Center, Oak Ridge Natl. Lab., Oak Ridge, TN, 37830
Mutat Res; 98(3):287-318 1982

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Dept. Preventive Medicine and Community Health, Div. Environmental Toxicology, Univ. Texas Medical Branch, Galveston, TX, 77550
Mutat Res; 98(3):319-374 1982

25. THE PHYSIOLOGICAL IMPORTANCE OF THE COLONIC MICROFLORA.
Gustafsson BE
Dept. Germfree Res., Karolinska Inst., Box 60 400, S-104 01 Stockholm, Sweden
Scand J Gastroenterol [Suppl]; 17(77):117-131 1982

26. AN ASSESSMENT OF THE ROLE OF MICRODOSIMETRY IN RADIOBIOLOGY.
Goodhead DT
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Radiat Res; 91(1):45-76 1982

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ENVIRONMENTAL AND OCCUPATIONAL CARCINOGENESIS

SERIES CK02 No. 82/12

DECEMBER, 1982

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ENVIRONMENTAL FACTORS: POLLUTION

1. CORRELATION OF MUTAGENIC ASSESSMENT OF HOUSTON AIR PARTICULATE EXTRACTS IN RELATION TO LUNG CANCER MORTALITY RATES.

Walker RD, Connor TH, MacDonald EJ, Trieff NM, Legator MS, MacKenzie KW, Dobbins JG
Div. Environmental Toxicology, Univ. Texas Medical Branch, Galveston, TX, 77550
Environ Res; 28(2):303-312 1982

Air particulate extracts from a series of solvents were tested in the Ames mutagen detection system and were found to be mutagenic in varying degrees as a function of the particulate

HE 20.3173/2:

collection site in Houston, Texas. The mutagenicity level at seven sites were compared with age-adjusted mortality rates in the same areas. Significant correlation was found with the lung cancer mortality rates but not with mortality rates for other causes. These findings support the hypothesis of a contribution of urban air particulate to the lung cancer rates. Furthermore, these findings suggest that an index of the mutagenicity of air particulate is a more powerful measure of the human health hazard of air pollution than the traditional indices of particulate concentration. (Author abstract) (26 Refs)

2. MUTAGENIC AND CHEMICAL CHARACTERIZATION OF AEROSOLS IN CONTRA COSTA COUNTY, CA (MEETING ABSTRACT).

Flessel CP, Wesolowski JJ, Twiss S, Cheng J, Ondo J, Chan R, Garcia L
California Department of Health Services, Berkeley, CA
1st World Congress on Toxicology and Environmental Health, May 27-30, 1982, Washington, D.C. American College of Toxicology 28 pp., 1982.

Recent epidemiological studies have demonstrated that residents of the industrial areas of Contra Costa County, CA are at higher risk of lung cancer than those of non-industrialized areas. Ambient air particulate samples collected throughout the County since 1978 have been analyzed for mutagenic activity in the Ames Salmonella test and for chemical pollutants, including specific organic carcinogens (eg benzo(a)pyrene). Integration of air measurements with cancer incidence data has shown that geographic distributions of community air pollutants are not associated with the distribution of lung cancer, with one exception, viz sulfate. However the correlation with SO4 was significant only in males suggesting risk factors other than air pollution. The studies are also attempting to identify the sources of the mutagens and carcinogens. The highest concentrations of these components are typically found during the winter months at sites subject to both automotive and industrial pollution. Statistical analysis shows that concentrations of mutagenicity are highly correlated with lead, nitrate and organics but much less so with sulfate or mass, indicating that vehicle emissions contribute significantly to mutagenic pollution. Mutagens in air extracts are principally in poler organic fractions. Extracts are less mutagenic in nitroreductase mutants of Salmonella, suggesting the presence of nitroorganics. (no Refs)

3. MUTAGENIC ACTIVITY OF CITY SMOG EXTRACTS AND FRACTIONS DETECTED BY INDUCTION OF 'SISTER CHROMATID EXCHANGES' IN HUMAN LYMPHOCYTES IN VITRO (MEETING ABSTRACT).

Schurer CC, Manojlovic N, Seemayer NH
Medizinische Klinik A, D-4000 Dusseldorf, W. Germany
Twelfth Annual Meeting of the European Environmental Mutagen Society, June 20-24, 1982, Dipoli, Espoo, Finland. European Environmental Mutagen Society 250 pp., 1982.

Epidemiological investigations indicate a higher incidence of lung cancer in industrialized areas. Air pollutants may be responsible for this phenomenon. Samples of city smog were collected in the heavy industrialized Rhine-Ruhr-area in West Germany. Beside the total extract the following fractions were included in testing: methanol, cyclohexane, polycyclic hydrocarbons and propanol. As target cells we used phytohemagglutinine-stimulated human lymphocytes in culture. Cells were exposed to extracts and fractions for 72 hours. Total extract was highly effective in induction of 'sister chromatid exchanges' already at concentrations of a few nanograms of benzo(a)pyrene per ml. Total extract was about 400 times more effective in induction than pure benzo(a)pyrene. A similar, slightly lower activity exerted the methanol fraction. A still strong, although in comparison to total extract lower activity showed the fractions of cyclohexane, polycyclic aromatic hydrocarbons and propanol. Results demonstrate that city smog extracts and fractions contain highly mutagenic substances for human cells. (no Refs)

4. MUTAGENIC AND TOXIC ACTIVITY OF ENVIRONMENTAL EFFLUENTS FROM UNDERGROUND COAL GASIFICATION EXPERIMENTS.

Timourian H, Felton JS, Stuermer DH, Healy S, Berry P, Tompkins M, Battaglia G, Hatch FT, Thompson LH, Carrano AV, Minkler J, Salazar E
Lawrence Livermore Natl. Lab., Biomedical Sciences Div., Univ. California, Livermore, CA, 94550
J Toxicol Environ Health; 9(5/6):975-994 1982

Organic extracts from ground water, and tar condensed from product gas, from the sites of two Lawrence Livermore National Laboratory underground coal gasification experiments in northeastern Wyoming: Hoe Creek II and Hoe Creek III were tested for mutagenicity using the Salmonella revision asay and for toxicity using the Microtox Model 2055. Groundwater from both sites contained bacterial mutagens. Groundwater in Hoe Creek II remained mutagenic for more than 1 yr after the burn. The organic neutral and basic fractions were mutagenic to Salmonella TA98 and TA100. The specific activity of the neutrals increased for TA98 and decreased for TA100; the results reflecting changing mutagenic components during the yr. The toxicity of the groundwaters correlated well with the concentration of phenolic compounds. For Hoe Creek III tar, when measured in bacteria, the specific mutagenic activity of the bases was much higher than that of the neutral fraction. Mutagenic activity of the neutral fraction was difficult to assess quantitatively in the Salmonella assay because above 50 ug/plate the dose response curve is nonlinear. A sensitive repair-deficient strain of Chinese hamster ovary cells was used to confirm that fractions from the tars are genotoxic in mammalian cells. Highly significant mutagenicity for thioguanine and azaadenine resistance was observed and the dose responses were markedly nonlinear, with a decline in mutations occurring at the higher doses. (32 Refs)

5. COMPARISON OF THE MUTAGENIC AND CARCINOGENIC ACTIVITIES OF ASPHALT AND COAL TAR PAINTS USED IN CONTACT WITH POTABLE WATER (MEETING ABSTRACT).

Robinson M, Bull RJ, Cmehil D, Slater R, Meier JR
Health Effects Research Laboratory, US Environmental Protection Agency, Cincinnati, OH, 45268
Toxicologist; 2(1):88 1982

Tanks and pipes used for storage and transport of drinking water are often coated with paints which contain either coal tar or asphalt pitch. We have begun a comparison of the potency of a series of products containing these materials utilizing the Salmonella/microsome assay (Ames test) and mouse skin initiation/promotion studies. Eight enamels were chosen for test; 4 asphalt-based (AP) and 4 coal tar-based (CTP). Initiation/promotion studies were conducted in the SENCAR mouse (40 female per group) utilizing single topical applications. A 20-week promotion schedule was used applying 1 ug of TPA (12-O-tetradecanoyl phorbol-13-acetate) 3 times weekly. Ames test results with AP were negative at up to 10 ul/plate. A very high mutagenic activity was found with CTP with rat liver S-9 fraction. Significant tumor initiating activity was observed with AP as well as CTP. The potency of AP

was considerably less, requiring approximately 200 ul/mouse to obtain an average of 0.5 tumors/animal at 20 weeks vs 0.2 ul/mouse required of the CTP. These data correspond to a potency equivalent to approximately 15 to 60 mg of benzo(a)pyrene [B(a)P] per ml of coal tar-based product. Estimates of B(a)P equivalence in AP would be 3 orders of magnitude lower. Total B(a)P and B(c)P content of CTP ranged from 1.9 to 3.4 mg/ml; although total identified polyaromatic hydrocarbon concentrations ranged from 29 to 60 mg/ml. (no Refs)

6. FORMALDEHYDE IN INDOOR AIR - REGULATORY ACTIONS IN FINLAND (MEETING ABSTRACT).

Pyotsia J
The Advisory Committee on Poisons, The Ministry of Social Affairs and Health, P.O. Box 223, 00531 Helsinki 53, Finland
Twelfth Annual Meeting of the European Environmental Mutagen Society, June 20-24, 1982, Dipoli, Espoo, Finland. European Environmental Mutagen Society 250 pp., 1982.

In 1980 the Finnish National Board of Health established an expert group to clarify health hazards caused by formaldehyde in indoor air. The expert group completed the evaluation in 1981. It was concluded that formaldehyde in indoor air has to be considered as a carcinogen and irritant. The major formaldehyde source was found to be particle board, which is one of commonly used construction materials. The expert group recommended that exposure to formaldehyde should be minimized. Based on the expert group report the National Board of Health recommended that the limit for formaldehyde concentration in indoor air should be 0.3 mg/m3. It was required that the industry should decrease the formaldehyde emission of the particle board to obtain a maximum indoor air formaldehyde concentration of 0.15 mg/m3 in houses built after 1982. These limits are to be controlled by local health authorities. If sufficient medical evidence indicates formaldehyde induced irritation authorities may require action to minimize the health hazard even though the maximum limits are not exceeded. (no Refs)

7. HEALTH EFFECTS OF EXPOSURE TO DIESEL EXHAUST: IMPACTS OF DIESEL-POWERED LIGHT-DUTY VEHICLES.

Griffin HE, Brusick DJ, Castagnoli N, Crump KS, Goldschmidt BM, Higgins IT, Hoffmann D, Horvath SM, Nettesheim P, Stuart BO, Witschi H
Graduate Sch. Public Health, San Diego State Univ., San Diego, CA
Health Effects of Exposure to Diesel Exhaust: Impacts of Diesel-Powered Light-Duty Vehicles. Washington, D. C., National Academy Press, , 169 pp., 1981.)

Available information on the possible adverse health effects caused by exposure to whole diesel exhaust or its components is reviewed and the likelihood of current and planned research programs to provide data needed for more reliable health risk estimates is discussed. Four areas were explored: mutagenesis, carcinogenesis, pulmonary and systemic effects, and epidemiology. Mutagenicity studies have demonstrated that mutagenic compounds adhere to the core of diesel exhaust particulates; whole diesel exhaust does not appear to be mutagenic in mammals; in vitro studies demonstrated cell transformation under conditions of high exposure; and diesel exhaust particulate extracts appear to contain more direct-acting mutagens than extracts from gasoline exhaust. While much of the carcinogenesis work is incomplete, it has been shown that extracts from diesel exhaust particulates contain carcinogenic materials, the carcinogenic activity of these materials appears to be low, and variations in engine operating characteristics and fuel type greatly affect the carcinogenic activity of diesel exhaust particulates. Pulmonary and systemic effects studies have demonstrated accumulation of carbonaceous particulates along with potentially hazardous compounds adsorbed to them in the deep lung; nonspecific histopathological changes; biochemical changes in organs distant from the respiratory tract; an adverse effect on pulmonary defense mechanisms; and acute toxic effects after a single high-level exposure, while long-term exposure effects are unknown. Epidemiologic studies are inconsistent and no convincing evidence has been demonstrated on the adverse health effects of diesel exhaust. (227 Refs)

8. NITROAROMATIC CARCINOGENS IN DIESEL ENGINE PARTICULATES: IMPLICATIONS FOR THE PUBLIC'S HEALTH (MEETING ABSTRACT).

Wei ET
Department of Biomedical and Environmental Sciences, School of Public Health, University of California, Berkeley, CA, 94720
Environmental Analytical Chemistry, Airborne Mutagens and Carcinogens, June 16-18, 1982, Provo, Utah. Electric Power Research Institute 44 pp., 1982.

Solvent extracts of particulates collected from air or from engine exhausts contain chemicals which are active in the Ames Salmonella assay, a short-term test designed to detect chemicals which may be potential mutagens or carcinogens. One unusual property of the activity of these extracts is that mutagenicity can be obtained in the absence of activation by mammalian oxidative enzymes. This type of activity, called 'direct-acting' mutagenicity, was first described in 1977, and indicated that the particulates in air and engine exhausts contained chemicals which may have unrecognized toxic potential. In the future, a major source of direct-acting mutagens in the environment may be particulate emissions from diesel-powered vehicles. Diesel cars have better fuel economy, but emit 30-80 times more particulates per mile than gasoline engine cars equipped with a catalytic converter. Solvent extracts of diesel particulate are direct-acting mutagens in the Ames test. Recently, Schuetzel et al at Ford Moter Co and Xu et al at Berkeley have reported detained studies on the presence of nitro-polycyclic aromatic hydrocarbons (nitro-PAH) in solvent extracts of diesel particulates. many nitro-PAH are direct-acting mutagens in the Ames test and are also carcinogens in animal tests. The detection, identification and toxicological assessment of nitro-PAH in diesel particulates will be presented at the symposium. (5 Refs)

9. ISOLATION AND IDENTIFICATION OF MUTAGENIC AND CARCINOGENIC NITRO-PAH (POLYNUCLEAR AROMATIC HYDROCARBONS) IN DIESEL EXHAUST PARTICULATES (MEETING ABSTRACT).

Xu XB, Nachtman JP, Jin ZL, Wei ET, Rappaport SM, Burlingame AL
Department of Biomedical and Environmental Health Sciences, School of Public Health, University of California, Berkeley, CA, 94720
Environmental Analytical Chemistry, Airborne Mutagens and Carcinogens, June 16-18, 1982, Provo, Utah. Electric Power Research Institute 44 pp., 1982.

The liver-independent activity, frequently called direct-acting mutagenicity (Ames Salmonella assay), found in the particulate matter emitted from diesel engines and atmospheric particulates, indicates that the chemical mutagens in them differ from the class of unsubstituted polynuclear aromatic hydrocarbons (PAH), which require mixed function oxidases for activation and which have been extensively studied in connection with vehicular emission and air pollution. Since 1980, we have worked on a total of 14 large glass fiber filters from

heavy-duty engine test apparatus. The combined extracts with dichloromethane contained more than 200 grams of organic matter which yielded 0.46 net TA98 revertants/ug. Bioassay-directed separation of the extracts was carried out successively on four columns, namely, preparative silica column, gel permeation column, high performance normal HPLC (high performance liquid chromatography) column and reverse phase HPLC column. Mutagenic activity was detected in most of the fractions, but fractions containing the highest specific activity were selected for further analysis. With high resolution mass spectrometry (HRMS), gas chromatography-mass spectrometry, more than 50 nitro-PAH have been tentatively identified and some, like 2-nitrofluorene, 9-nitroanthracene, and 1-nitropyrene, etc, are positively identified. The diversity of nitro-PAH thus identified suggests that large numbers of such compounds are formed during or following the combustion process. As more nitro-PAH have been proved to be animal carcinogens, further work on their identification and quantification will be required to assess the possible health hazard to mankind with the increasing production of diesel engines. (no Refs)

10. CHEMICAL CLASS SEPARATION AND DETAILED IDENTIFICATION OF GENOTOXIC POLYCYCLIC AROMATIC COMPOUNDS IN AIRBORNE PARTICULATES (MEETING ABSTRACT).

Later DW, Lee ML

Department of Chemistry, Brigham Young University, Provo, UT, 84602

Environmental Analytical Chemistry, Airborne Mutagens and Carcinogens, June 16-18, 1982, Provo, Utah. Electric Power Research Institute 44 pp., 1982.

The presence of polycyclic aromatic hydrocarbons (PAH) in the environment has long been a concern due to their demonstrated mutagenicity and carcinogenicity in laboratory assay systems. Studies have also been reported that survey carcinogenicity in human populations exposed to industrial materials that contain substantial levels of PAH. Extensive characterization of these compounds in atmospheric urban and rural air particulates has been achieved. Recently, the National Bureau of Standards (NBS) released an air particulate standard reference material with precise qualitative and quantitative data for the PAH in the sample. In general, much less work has been done to determine the presence of heterocyclic nitrogen- and sulfur-containing polycyclic aromatic compounds (PAC) in atmospheric particulate matter. Like the PAH, the nitrogen and sulfur heterocycles have demonstrated carcinogenicity, mutagenicity, and other deleterious biological effects in laboratory assay systems. Recently, methods have been developed by this lab for the chemical class fractionation and detailed identification of PAH and nitrogen- and sulfur-containing PAC in alternate fuels. Liquid-solid chromatography on alumina and silica adsorbents enables the pre-separation of PAC in neat samples according to chemical functionality. Although synfuel crudes are a completely different matrix, similar methods have now been employed to separate the nitrogen-containing PAC and parent PAH in air particulates. By selective detection methods, the sulfur-containing PAC in air particulates can also be detected and identified. These analytical methods as well as qualitative and quantitative results for the NBS and two other air particulates will be presented and discussed. (no Refs)

11. CONTROLLING CADMIUM IN THE HUMAN FOOD CHAIN: A REVIEW AND RATIONALE BASED ON HEALTH EFFECTS.

Ryan JA, Pahren HR, Lucas JB

Municipal Environmental Res. Lab., U.S. Environmental Protection Agency, Cincinnati, OH, 45268

Environ Res; 28(2):251-302 1982

Cadmium can cause acute and chronic illness in humans. The evidence for inclusion of Cd among the elements known to be human carcinogens is insufficient. There is scientifically recognized agreement that renal tubular damage and pulmonary emphysema are the two cardinal pathological lesions associated with excessive Cd exposure. Renal tubular damage is the chronic effect attributed to environmental Cd exposure for the nonoccupationally exposed population. For the nonoccupationally exposed population the primary routes of Cd exposure are through food and tobacco smoke. Most persons are in an approximate Cd balance and tend to accrete Cd until approximately age 50, after which a negative balance ensues. Cadmium is accumulated in the renal cortex and concentrations of between 200 and 300 ug/g wet wt generally result in renal dysfunction, with the 200 ug/g level being the most widely accepted number at which the first signs of beta2-microproteinuria occur. In the United States the current mean level of Cd in the kidney cortex is 20-35 ug/g with about 0.6% of the population exceeding 100 ug/g. The impact of increasing soil Cd on the movement of Cd from soil to plant to animal to human would indicate little reason for concern. In contrast, the movement of Cd from soil to plant to human can be of concern. The degree of risk is dependent upon the amount of the diet which is affected, diet selection of the individual, soil pH at which the crop is produced, and the amount of Cd added to the soil. (Author abstract) (248 Refs)

ENVIRONMENTAL FACTORS: COMMERCIAL PRODUCTS

12. IS DYEING OF BAIT A CARCINOGENIC HAZARD FOR ANGLERS AND THEIR SUPPLIERS? (MEETING ABSTRACT).

Searle CE, Teale J

Department of Cancer Studies, The Medical School, Birmingham B15 2TJ, England

Twenty-third Annual General Meeting of the British Association for Cancer Research, March 29-31, 1982, Edinburgh Scotland. British Association for Cancer Research 78 pp., 1982.

Chrysoidine (2,4-diaminoazobenzene), once used as a food dye, induced liver tumors in most male and female mice when fed at 0.2% in the diet, and it was the most active of some azo dyes and reduction products tested for mutagenicity in Salmonella typhimurium TA 1538. Nevertheless it is currently in widespread use for dyeing maggots for use as bait by anglers, for which purpose the hydrochloride is mixed with maggots by anglers' suppliers shortly before sale. This causes considerable long-lasting staining of the hands of shop staff and, to a lesser extent, of the very many anglers who use the bait, often from an early age. A Midlands dealer, who uses 14 kg of chrysoidine HCl annually, became anxious about its safety and informed us of 3 angling acquaintances who had developed bladder tumors. The early ages of presentation -2 were under 40- would suggest a possible 'occupational' origin, but none had worked in the chemical or rubber industries. Some other dyes,

including the carcinogen auramine, have also been used but apparently with lesser problems of contamination. (2 Refs)

13. BASIC CONCEPTS AND PROSPECTS OF PREVENTION OF TUMORS. HABITS: CASE OF CIGARETTE SMOKING.

Modolo MA
Cattedra di Igiene, Universita di Perugia, Perugia, Italy
Acta Oncol (Padova); 2(1/2):129-135 1981

Smoking as a health hazard, especially concerning lung cancer, is discussed, and measures to reduce tobacco consumption are recommended. Advertisement for tobacco products and smoking in certain areas should be banned, and the public should be made aware of the hazards of smoking. Tobacco production should be gradually reduced. Maximum permissible levels should be set for combustion products from cigarettes. (14 Refs) (In ITA)

14. THE HEALTH CONSEQUENCES OF SMOKING. CANCER. A REPORT OF THE SURGEON GENERAL.

Luoto J, Shopland DR
Office on Smoking and Health, Public Health Service, United States Dept. Health and Human Services, Rockville, MD, 20857
The Health Consequences of Smoking. Cancer. A Report of the Surgeon General. Washington, D. C., NIH Publication No. 82-50179, 322 pp., 1982.

The 1982 Report on the Health Consequences of Smoking, prepared in accordance with the Public Health Cigarette Smoking Act of 1969 and the Federal Cigarette Labeling and Advertising Act is presented focusing on a comprehensive assessment of the associations reported between smoking and various cancers. Biomedical evidence for determining causality between smoking and cancer, mechanisms of carcinogenesis, connection between involuntary smoking and lung cancer, and cessation of smoking are discussed. Smoking has been implicated as a cause of cancer of the lung, larynx, oral cavity, and esophagus, and associated with cancer of the urinary bladder, kidney, and pancreas. Provisional mortality data for 1980 indicate that cancer was responsible for approx 412,000 deaths in the United States. Investigations have suggested that 22-38% of these deaths can be attributed to smoking, and therefore are potentially 'avoidable' if smoking did not exist as human behavior. With increasing duration of smoking cessation, overall cancer death rates decline, approaching the death rate of nonsmokers. Lung cancer mortality increases with increasing dosage of smoke exposure and is inversely related to age of initiation. The biological activity of whole cigarette smoke and its tar and tar fractions can be measured by improved inhalation assays and tests for tumor-initiating, tumor-promoting, and cocarcinogenic activities on mouse skin. (759 Refs)

15. ORAL CONTRACEPTIVE STEROIDS AND MALIGNANCY.

Grant E
No affiliation given
Clin Oncol; 8(2):97-102 1982

Current literature data on the cancer incidence among the users of oral contraceptive steroids (OCS) are reviewed. The use of OCS was shown to be associated with considerable increase of the incidence of breast cancer and cervical cancer. The largest increase in the incidence of breast and cervical cancer was observed in women 15-24 yr old who have a risk of double exposure to exogenous hormones. (29 Refs)

16. AN ASSESSMENT OF THE POTENTIAL GENOTOXIC ACTIVITY OF FOUR SUNSCREEN AGENTS (MEETING ABSTRACT).

Trueman RW, Schupbach M
Imperial Chemical Industries PLC, Central Toxicology Laboratory, Alderley Park, Macclesfield, Cheshire, England
Twelfth Annual Meeting of the European Environmental Mutagen Society, June 20-24, 1982, Dipoli, Espoo, Finland. European Environmental Mutagen Society 250 pp., 1982.

Four ingredients of commercial sunscreens have been evaluated for potential carcinogenic and mutagenic hazard. These were: 2-ethylhexyl-p-methoxycinnamate, 1,3-di-p-methoxyphenyl propane-1, 3-dione, 1-(4-t-butylphenyl)-3-(4-methoxyphenyl)-propane-1, 3-dione and 2-ethylhexyl-4-dimethylaminobenzoate. Data derived from several independent microbial mutation assays are reviewed together with an assessment of the protective action of two of the preparations against UVR (UV radiation)-induced mouse skin carcinoma. This work was carried out to display the available toxicological knowledge of four commercial sunscreens and structurally related materials in order to assess the human hazard likely to result from the use of such materials in sunscreen preparations. (no Refs)

17. EXPOSURE TO CIGARETTE-SMOKE CONDENSATE AND OCCUPATIONAL HISTORY OF FEMALE LUNG CANCER PATIENTS.

Vutuc C, Kunze M
Abteilung Sozialmedizin, Hygiene-Institut der Universitat Wien, Kinderspitalgasse 15, A-1095 Wien, Austria
Onkologie; 4(4):184-187 1981

In a retrospective case-control study on female lung cancer, 130 (65%) of 200 cases suffered from a tumor group Kreyberg I and 70 (35%) from a Kreyberg II tumor. Significantly more Keryberg I cases (75%) than controls (22%) were smokers as well as significantly more Kreyberg I than Kreyberg II cases (29%). There was no difference in the proportion of ex-smokers, but the duration of nonsmoking was significantly shorter in Kreyberg I cases (4 years) than in controls (12 years) and in Kreyberg II cases (9 years). Patients with Kreyberg I (88%) and Kreyberg II (90%) tumors preferred significantly more often high-tar group III (greater than 24 mg/cigarette) cigarettes than controls (63%). Patients with a Kreyberg I tumor differ significantly from controls by longer smoking careers (40 years) and higher daily consumption of group III (18/day) and group I (18/day) cigarettes. Patients with a Kreyberg II tumor had a significant higher consumption (20/day) of group I cigarettes than controls. Female lung cancer patients (74%) more often than controls (64%) reported occupations other than housewives. There were no other significant differences in the occupational patterns between patients and controls. (Author abstract) (18 Refs) (In GER)

ENVIRONMENTAL AND OCCUPATIONAL FACTORS: RADIATION

18. RISKS OF NUCLEAR ENERGY AND LOW-LEVEL IONIZING RADIATION. REPORT OF AN AMA ADVISORY PANEL TO THE COUNCIL ON SCIENTIFIC AFFAIRS OF THE AMERICAN MEDICAL ASSOCIATION.

Ashare AB, Lave LB, Lincoln TA, Lushbaugh CC, Murray SS, Saenger EL, Schaefer WW, Tupper CJ, Wald N
Dept. Nuclear Medicine, St. Elizabeth's Hosp., Boston, MA
Risks of Nuclear Energy and Low-Level Ionizing Radiation. Report of an AMA Advisory Panel to the Council on Scientific Affairs of the American Medical Association. Monroe, WI, American Medical Association, 40 pp., 1981.

Health effects of some of the sources of electricity that can be used at present and in the future are reported focusing on the health effects of nuclear energy. Various documents, including the 1979 report of the National Academy of Sciences, 'Risks Associated with Nuclear Power', and the 'Report of the President's Commission on the Accident at Three Mile Island' are reviewed. Aspects related to the peaceful uses of nuclear energy are considered. Because some of the reviewed documents are comprehensive compilations of scientific knowledge about the adverse health effects of radiation, the literature is not summarized in detail. The main health-related issues are defined in an attempt to prepare a report understandable to nonradiologist physicians and which would also take note of people's major questions and concerns. Generating electricity with nuclear energy, mine tailings and nuclear wastes, occupational radiation exposure, health effects of ionizing radiation, risks of ongoing nuclear operations, public perception of risk, and modifications of the 1978 American Medical Association report are discussed. Relevant definitions and abbreviations are presented. One of the recommendations is that a continuing emphasis should be placed on research that is capable of determining more precisely the health effects of low-level ionizing radiation. (69 Refs)

19. PROBLEMS IN ASSESSING THE CANCER RISKS OF LOW-LEVEL IONIZING RADIATION EXPOSURE. VOLUME 1.

Comptroller General of the United States
(c/o Superintendent of Documents), United States General Accounting Office, Document Handling and Information Services Facility, P.O. Box 6015, Gaithersburg, MD, 20760
Problems in Assessing the Cancer Risks of Low-Level Ionizing Radiation Exposure. Volume 1. Washington, D. C., U. S. General Accounting Office, 85 pp., 1981.

The scientific issues involved in determining the cancer risks of low-level radiation exposure are analyzed and the current status of knowledge of these risks are assessed. Key findings, conclusions, and recommendations in the complete Technical Report, Volume 2, are discussed in a nontechnical manner. Basic objectives of the study were to determine conclusions, if any, on low-level effects of ionizing radiation, and about the best direction for current and future research. A literature search was conducted to identify articles of interest, and researchers were interviewed. Issues are introduced and a brief primer on radiation facts and concepts is presented. The fundamental aspects of exposure to ionizing radiation to subcellular and cellular organisms are reviewed, including chemical effects of ionizing radiation, DNA damage and repair, the immune system, and experiments with cultured mammalian cells. Problems of epidemiological analyses, tests of dose-response curves, cancer incidence in Hanford workers, a survey of multiple myeloma patients, childhood leukemia mortality in Utah, estimation of latency, and susceptible groups in the population are discussed. The Federal radiation research program is reviewed with respect to funding, types of radiation research, epidemiology, animal research, research on mechanisms of radiation carcinogenesis, and current efforts to improve the Federal radiation research program. Conclusions and recommendations on the Federal radiation research program are made. (no Refs)

20. PROBLEMS IN ASSESSING THE CANCER RISKS OF LOW-LEVEL IONIZING RADIATION EXPOSURE. VOLUME 2.

Comptroller General of the United States
(c/o Superintendent of Documents), United States General Accounting Office, Document Handling and Information Services, P.O. Box 6015, Gaithersburg, MD, 20760
Problems in Assessing the Cancer Risks of Low-Level Ionizing Radiation Exposure. Volume 2. Washington, D. C., U. S. General Accounting Office, 690 pp., 1981.

The scientific effects of low-level ionizing radiation exposure were studied in order to draw definite conclusions and to determine the best direction for current and future research. Radiation facts and concepts helpful in understanding the technical chapters are reviewed and a history of radiation protection standards is presented. The fundamental biological aspects of exposure to ionizing radiation are reviewed, including chemical effects, cell inactivation, cell mutation, cell transformation, radiation damage and repair, damage and repair of the immune system, and a two-target model of cell transformation. The current status of research of radiation effects on laboratory-grown cells is summarized, describing radiation experiments in which cells are killed, mutated or transformed. Statistical analyses of studies of groups of persons exposed to radiation are presented, and include discussion of the dose-response relationship, latency period, susceptibility, radiation-sensitive population subgroups, the Hanford workers survey, a General Accounting Office analysis of the Hanford data, an unblinded survey of multiple myeloma, and childhood leukemia mortality in Utah. Federal research on the biological effects of ionizing radiation is reviewed, including a report by the National Institute for Occupational Safety and Health, and research programs funded by Federal agencies. (517 Refs)

21. ESTIMATION OF RISK OF CANCER INDUCTION IN POPULATIONS EXPOSED TO LOW-LEVEL RADIATION.

Fabrikant JI
Donner Lab., Univ. California, Berkeley, CA, 94720
Invest Radiol; 17(4):342-349 1982

Background to the current National Academy of Science's Report of the Committee on the Biological Effects of Ionizing Radiations, the BEIR-III Report, is presented. Disagreements and controversies encountered in the formulation of the report are explained. The structure of the Report is reviewed and the controversy leading to the problem of estimating numerical risk coefficients for radiation-induced cancer in human populations exposed to low-level radiation is emphasized. Some of the important BEIR-III conclusions relevant to radiation-induced cancer in man are presented. Somatic risks are discussed with respect to the relative biological effectiveness, the evidence relating dose to response, and the use of projection models for estimating numerical risk coefficients. The collective influence of many uncertainties in estimation of the carcinogenic risk to man of low-level radiation was considered important, so that estimates of human cancer risk for low-dose, low-linear energy transfer (LET) radiation are not possible. Emphasis should be placed on the approach to the method of risk coefficient esti-

mation rather than any numerical values calculated. In most cases linear extrapolation from high-dose data leads to overestimation of the risk from low-dose, low-LET radiation. Delayed health effects could occur in workers with lifetime occupational exposures which may be accumulated by continuousiy working close to the max permissible dose. The BEIR-III Report sets no radiation protection standards. (17 Refs)

22. RISK LEVEL AND LATENT PERIOD FOR LUNG CANCER IN WORKERS EXPOSED TO LOW-LEVEL RADON.

Sun S
Hunbei Inst. Radiation Protection, People's Republic of China
Zhonghua Fangsheyixue Yu Fanghu Zazhi; 2(1):63-67 1982

This article introduces some new view points on the minimum radiation dose from radon needed to induce lung cancer, its latent period, synergistic action with smoking, and histological classification of lung cancer. Although continuous accumulation of data is needed to resolve many problems, many investigators recently agreed on the new estimate on the risk of low level radon radiation. (22 Refs) (In CHI)

23. EVIDENCE LINKING ULTRAVIOLET LIGHT AND SKIN CANCER (MEETING ABSTRACT).

Fitzpatrick TB, Sober AJ
Department of Dermatology, Harvard Medical School, Boston, MA
148th National Meeting of the American Association for the Advancement of Science, January 3-8, 1982, Washington, D.C. American Association for the Advancement of Science 182 pp., 1982.

Little argument exists for the linkage of solar exposure and nonmelanoma (basal cell and squamous cell carcinoma) skin cancer (NMSC). Among the evidences cited are: 1) increasing risk with age; 2) increasing risk with increasing hours of solar exposure; 3) increased frequency in those with out-door occupations; 4) increased frequency on sun-exposed areas such as head-neck; 5) increased risk in light skinned Caucasians; 6) rare in Blacks; 7) marked latitude gradient with increased risk in areas of high insolation. Decrease in the atmospheric ozone with increased UVL will surely cause an increase above the current approximately 400,000 cases of NMSC/year in the US. The data linking ultraviolet exposure and malignant melanoma is not so clear-cut except for lentigo malignant melanoma which occurs on sun-damaged, sun-exposed skin of elderly individuals. Evidence cited for the other types of melanoma is as follows: 1) increased Blacks; 3) difference in body distribution in Blacks; 4) difference in distribution patterns in Caucasian men and women with back prominent in both, but lower leg prominent in women and not in men; 5) latitude gradient within countries. The paradoxes in the linkage are the following: 1) outdoor workers are at lower risk than white collar high-in-come professionals; 2) no epidemiologic linkage has been demonstrated between cumulative exposure; 3) areas of greatest exposure on the body surface are not the sites at greatest frequency for melanoma. (no Refs)

24. RADIATION CARCINOGENESIS (MEETING ABSTRACT).

Fry RJ
Biology Division, Oak Ridge National Laboratory, Oak Ridge, TN, 37830
First Conference on Radioprotectors and Anticarcinogens, June 21-24, 1982, Washington, DC. National Bureau of Standards 191 pp., 1982.

The relative quantity of specific types of DNA lesions varies with radiation quality, from predominately pyrimidine dimers with ultraviolet radiation of less than 320 nm to increasing numbers of double strand breaks with high-LET (linear energy transfer) radiation. Cancer is associated in a dose-dependent manner with this broad range of radiations. However, the probability of a cancer is dependent on both the inherent properties of the exposed cells and the host factors acting on those cells. Both the cellular and host factors acting on those cells. Both the cellular and host factors are determined genetically. Animal experiments illustrate the marked difference in tissue-, strain- and species-dependent susceptibility for radiation induced cancer. The tissue- and species-dependent differences reflect the differences in the mechanisms involved. Dose-response relationships for cancer induction, that are used for both risk estimates and testing models, are influenced by a variable number of host factors. The need is for experimental systems that allow the separate study of the initial events or transformation and the factors that influence the expression of the transformed cells. Radiation-induced events may be retained in cells over periods that are long in relation to the cell cycle and become expressed as a result of subsequent exposure to radiation or other factors. (no Refs)

25. PRINCIPLES IN RADIATION MEDICINE HAZARDS.

Ilbery PL
Commonwealth Dept. Health, Sydney, Australia
Australas Radiol; 25(3):312-319 1961

Minimizing radiation medicine hazards are discussed with respect to radiobiology and the harm/benefit, radiation medicine practice, and licensing. Regulation of medical use of radiation is necessary in order to protect the health and safety of users and patients alike. Medical radiation exposure of a patient differs from exposure from other sources in that the risk incurred is to a person who is in receipt of direct benefit by virtue of improved diagnosis or therapy. Radiomimetics, radioisotopes, and radiodiagnostics are discussed. (37 Refs)

26. BIOLOGICAL EFFECTS OF RADIATION FROM DENTAL RADIOGRAPHY.

Gibbs SJ
Dept. Radiology and Radiological Sciences, Vanderbilt Univ. Sch. Medicine, Nashville, TN, 37232
J Am Dent Assoc; 105(2):275-281 1982

Risks of radiation exposure from dental radiography are discussed with respect to radiation quantities and units, genetic effects, cancer, exposure of the embryo and fetus, and occupational exposure. It was concluded that the cancer and genetic risks to a patient are numerically small, and the risk of failure to make an accurate diagnosis may be greater than the risk from exposure to radiation from a justified and properly conducted radiographic examination. (51 Refs)

27. CHROMOSOMAL DAMAGES DURING DIAGNOSTIC ASCERTAINMENTS.

De Ferrari M, Serra GE, Caneparo G, Ottaggio L, Toma S
Scientific Inst. Study and Treatment of Cancer, Genoa, Italy
Acta Thermogr; 6(1-3):15-18 1981

The biological effects of diagnostic ionizing radiations, including delay and/or inhibition of cell proliferation, cell death, chromosomal and chromatid aberrations, and metabolic and functional alterations, are discussed. Simple diagnostic procedures can be leukemogenic under certain conditions. Children born to women exposed to diagnostic x-rays during pregnancy have an increased risk of developing leukemia before the age

of 10 yr. While mammography is the most reliable method for breast cancer detection, risks vs benefits obtained with the procedure have not been fully evaluated. Although the skin dose received during mammography has dropped in most cases from 8-12 rad to 0.2-0.3 rad per examination, some senologic centers still use the higher dose procedures. The breast has been shown to be sensitive to induction of neoplasia by x-rays, and the risk involved is directly proportionai to the dose, while latency is indirectly related to dose. Examination of metaphase chromosomes from hematopoietic cells obtained from women before, 10 days after and 1 mo after M-mode mammography indicated that the procedure did induce chromosomal damage. The number of numerical variations in chromosome number, polyploides, chromatid and chromosome anomalies increased following the procedure. M-mode examination should be reserved for symptomatic patients at high risk for developing breast neoplasia. (no Refs)

28. IONIZING RADIATIONS: DNA DAMAGE, MUTAGENICITY AND MORPHOLOGICAL TRANSFORMATION IN MAMMALIAN CELLS. CARCINOGENICITY IN RODENTS AND IN HUMAN.

Parodi S, Taningher M, Toma S, Scarpati D, Santi L
Dept. Oncology, Genoa Univ., Genoa, Italy
Acta Thermogr; 6(1-3):10-15 1981

The relationship between ionizing radiations, modification of DNA, mutagenicity and carcinogenicity is reviewed. The energies associated with ionizing radiations range from 10(2)-10(4) electron volts for diagnostic x-rays to 10(9) electron volts for the highest radiations used in radio-therapy. In female breasts, 100-300 rad doses gave an approximate increase of cancer of 2% compared to a control group, with an av latency of 24 yr. Biological models favor a nonlinear relationship between dosage and effect, especially when comparing very small and av cumulative dosages. It is possible to reach, during the lifetime of an individual, cumulative doses of about 200 rads or more; therefore the cumulative radiation exposure during the lifespan of each patient should be recorded. Radiological examinations in young asymptomatic women should be viewed with caution, in terms of risk-benefit assessment, considering the essential role played by latency time in tumor development. (27 Refs)

OCCUPATIONAL FACTORS: SPECIFIC AGENTS OR INDUSTRIES

29. AN EPIDEMIOLOGICAL STUDY OF WORKERS WITH A LONG-TERM OCCUPATIONAL EXPOSURE TO A CARCINOGEN (MEETING ABSTRACT).

Lange A, Garncarek D, Tomeczko O, Bisikiewicz R
Department of Clinical Immunology, Institute of Immunology and Experimental Therapy, Wroclaw, Poland
Fifth European Immunology Meeting, June 1-4, 1982, Istanbul, Turkey. Turkish Society of Immunology 354 pp., 1982.

Epidemiological studies documented higher risk of cancer in asbestotic cases and also in asbestos exposed people. Among asbestos workers a higher incidence of autoantibodies and skin anergy was also found. Hence, asbestos exposure outcome has provided an unique opportunity of studying the role of immunological mechanisms in carcinogenesis. In 8 years five surveys of asbestos workers were performed. Out of 183 cases whose sera were examined at least three times in an 8 year period, 77 cases ANA a were found. At this time 30 asbestotic cases were diagnosed. ANA positive cases contributed in all surveys to the asbestotic group proportionally 2 to 3 times more frequently than ANA negative cases. In the middle of an 8 year observation skin reactivity to recall antigens and PHA (phytohemagglutinin) was evaluated. In all surveys asbestotic cases were more frequently found among those lacking response to SK-SD (streptokinase-streptodornase) and PHA. In 23 cases diagnosis of asbestosis was made after the skin testing. These cases were found in the group with anergy, hypoergy and normal response in fractions of 0.3, 0.18 and 0.11 respectively. ANA incidence and anergy peaks from 16 to 21 years from the onset. This is close to the time when an increased incidence of cancer is expected. The further follow-up will tell us which status of immunity (anergy, hyperergy and normal response) is more or less linked with asbestos exposure related carcinogenesis. (no Refs)

30. MORTALITY OF BRAIN TUMORS AMONG ASBESTOS INSULATION WORKERS IN THE UNITED STATES AND CANADA.

Seidman H, Selikoff IJ, Hammond EC
American Cancer Society, New York, NY, 10001
Ann NY Acad Sci; 381:160-171 1982

Deaths resulting from brain tumors among workers in the petrochemical industry have called attention to the possibility that these neoplasms may be the result of occupational exposure to carcinogens. We have examined the experience of a cohort of 17,800 insulation workers known to be at significant increased risk of cancer at a number of sites (lung, mesothelioma, gastrointestinal, oral cavity, pharyngeal, larynx, renal) to ascertain whether their asbestos exposure also increased their risk of brain tumors. From 1967 to 1979, there were 24 deaths from primary brain tumors in this cohort, somewhat more than were anticipated (18.0 such deaths were expected based on US general population data, and 20.5 if smoking was taken into account). The excess was not statistically significant' at the 5% level although this does not rule out the possibility of an etiological association. It was of interest that the observed excess was concentrated (about twice expected) among insulators in the younger ages (those under 50) and during the early period after onset of work (15-24 yr), in contrast with age distribution and latency in other asbestos-associated neoplasms. This may have relevance to theoretical concerns about questions of initiation and promotion in the etiology of cancer, particularly with regard to brain tumors. (Author abstract) (11 Refs)

31. THE INVESTIGATION OF BRAIN TUMOR OCCURRENCE IN OTHER OCCUPATIONAL GROUPS: INTRODUCTION.

Selikoff IJ
Mount Sinai Sch. Medicine, City Univ. New York, New York, NY, 10029
Ann NY Acad Sci; 381:116-118 1982

Difficulties in studies of the cancer incidence of workers exposed to asbestos are discussed. Almost no cancers were observed earlier than 20 yr from the first exposure: most deaths occurred more than 20 yr from the start of employment. In 17,800 asbestos workers followed for 166,853 man-yr of observation, 319.7 deaths from cancer (all sites) were expected, while more than 900 were observed. (1 Ref)

32. OCCUPATIONAL AND IN VITRO EXPOSURE TO STYRENE ASSESSED BY UNSCHEDULED DNA SYNTHESIS IN RESTING HUMAN LYMPHOCYTES.

Pero RW, Bryngelsson T, Hogstedt B, Akesson B
Wallenberg Lab., Biochemical and Genetic Ecotoxicology, Univ. Lund, Box 7031, S-220 07 Lund 7, Sweden
Carcinogenesis; 3(6):681-685 1982

Lymphocytes from 38 individuals occupationally exposed to styrene concentrations in workroom air of 1 ppm to 40 ppm were examined for any genotoxic effects using unscheduled DNA synthesis (UDS) as the indicator of DNA damage. The mean level of N-acetoxy-2-acetylaminofluorene (NA-AAF) induced UDS was significantly increased (p less than 0.001) for the styrene exposed group when compared to the mean level for the unexposed controls. There was no significant effect on uv-induced UDS from the in vivo styrene exposure. Lymphocyte cultures exposed in in vitro to styrene concentrations up to 100 uM have confirmed the UDS data collected on individuals occupationally exposed to styrene. In addition, the in vitro study has also shown that the increased NA-AAF induced UDS resulting from styrene exposure was paralleled by a similar increase in NA-AAF binding to DNA. Taken together these results indicate that styrene exposure does not inhibit DNA repair synthesis, but rather it predisposes lymphocytes to an increased risk for DNA damage induction from subsequent genotoxic exposures. (Author abstract) (31 Refs)

33. INFLUENCE OF SMOKING ON URINARY MUTAGENICITY AFTER OCCUPATIONAL EXPOSURE TO CYTOSTATIC DRUGS (MEETING ABSTRACT).

Bos RP, Theuws JL, Henderson PT
Institute of Pharmacology/Toxicology Section, University of Nijmegen, Nimjegen, The Netherlands
Twelfth Annual Meeting of the European Environmental Mutagen Society, June 20-24, 1982, Dipoli, Espoo, Finland. European Environmental Mutagen Society 250 pp., 1982.

It is known that treatment of patients and animals with cytostatic drugs results in the appearance of mutagens in their urine. Smoking of cigarettes also results in the excretion of mutagens in urine. Our aim was to investigate the combined effect of smoking and exposure to cytostatic drugs on the mutagenicity of urine from nurses. We found that mutagenicity of urine from smoking nurses, occupationally involved in the treatment of cancer-patients with cytostatic drugs, was increased significantly in comparison with that of either non-smoking nurses handling these substances, or smoking control subjects. Mutagenicity was determined with the aid of Salmonella typhimurium TA100. Rats pretreated with aroclor 1254 showed higher mutagenicity in their urine than untreated rats after cyclophosphamide administration. For this reason, induction of enzymes involved in the mutagenic activation of cytostatic drugs might be responsible for the synergistic effect of smoking. Further, the animal experiments showed that cyclophosphamide can be absorbed after oral or percutaneous administration. (1 Ref)

34. IMPORTANCE OF SEQUENTIAL EXPOSURE IN THE PRODUCTION OF EPICHLOROHYDRIN AND ISOPROPANOL.

Enterline PE, Lilis R, Alexander V, Maltoni C
Dept. Biostatistics, Graduate Sch. Public Health, Univ. Pittsburgh, Pittsburgh, PA, 15261
Ann NY Acad Sci; 381:344-349 1982

Difficulties encountered in interpretation of epidemiological data on cancer risk associated with occupational exposure to two agents in sequence are discussed, with special reference to a case involving epichlorohydrin (ECH) and isopropyl alcohol (IPA). Workers exposed to ECH at one plant for more than one quarter during the years 1948-65 exhibited excess deaths from lung cancer, but further analysis demonstrated that only those workers previously exposed occupationally to IPA at the same plant accounted for all the excess mortality in the ECH-exposed workers. Workers exposed more than one quarter during the period 1941-65 to IPA had excess buccal and pharyngeal cancer, and a slight excess of lung cancer. Data from a second production facility at which workers were exposed only to ECH for more than one quarter in the period 1955-65, also suggested an increased mortality from lung cancer, although the result was not statistically significant. These findings suggest that, when dealing with a single defined exposure, all other possible exposures should be considered. (11 Refs)

35. SCES AMONG HERBICIDE SPRAYERS EXPOSED TO 2,4-D AND MCPA (MEETING ABSTRACT).

Linnainmaa K, Vainio H
Institute of Occupational Health, Helsinki, Finland
Twelfth Annual Meeting of the European Environmental Mutagen Society, June 20-24, 1982, Dipoli, Espoo, Finland. European Environmental Mutagen Society 250 pp., 1982.

Increased risk of soft tissue sarcomas and malignant lymphomas has been reported among workers exposed to phenoxy acid herbicides. Phenoxy acids are not, however, mutagenic in a range of bacterial assays. The cytogenetic data of these herbicides are insufficient and conflicting. We have studied the induction of SCEs (sister chromatid exchanges) in peripheral lymphocytes of workers spraying foliage in forestry with 2,4-D (2,4-dichlorophenoxy acetic acid) and MCPA (2-methyl-4-chlorophenoxy acetic acid) preparations, or their mixtures. In order to follow possible exposure related changes in SCE frequencies, three successive blood samples were taken from 50 male sprayers during the spraying season July - Oct, 1981. The actual exposure levels were estimated by measuring the concentrations of 2,4-D and MCPA in the urine of the sprayers. The concentrations of 2,4-D and MCPA in the urine samples after exposure varied from 0.06 to 10.02 mg/l. No significant differences in SCE frequencies, however, were observed in samples taken before, during, or after the exposure. Further, the means of SCEs in a non-exposed control group of 15 subjects were found to fall in the same range as those of the exposed subjects. A difference in means of SCEs was observed between smokers and non-smokers, smokers showing significantly higher mean values of SCEs than non-smokers. (3 Refs)

36. MONITORING OF THE URINARY MUTAGENICITY IN MEN EXPOSED TO LOW DOSES OF TRINITROFLUORENONE (TNF) (MEETING ABSTRACT).

Crebelli R, Falcone E, Aquilina G, Carere A, Zito R
Istituto Superiore di Sanita, Rome, Italy
Twelfth Annual Meeting of the European Environmental Mutagen Society, June 20-24, 1982, Dipoli, Espoo, Finland. European Environmental Mutagen Society 250 pp., 1982.

In 1981 the safety of the use of some IBM photocopying and printing systems was debated in Italy owing the presence of the mutagenic and suspected carcinogenic TNF in their photoconductor apparatus. In this connection a study on the urinary mutagenicity in workers charged with the use of such engines was undertaken to evaluate their exposition and genotoxic risk. Forty urine samples were tested vs Salmonella typhimurium TA98 in the plate incorporation assay; in the same time a study was performed to evaluate the urinary recovery in exposed rats. No mutagenic activity could be detected in human urine

samples; on the other hand the recovery studies showed that less than 1% of the administered dose was recovered in urine. These last results invite some caution in the interpretation of the negative results obtained with human urine and suggest that a limited exposure might fail to cause a detectable mutagenicity in body fluid. (no Refs)

37. A PROPORTIONATE MORTALITY STUDY OF AN OIL, CHEMICAL AND ATOMIC WORKERS LOCAL IN TEXAS CITY, TEXAS.

Reeve GR, Thomas TL, Kelly VF, Waxweiler RJ, Itaya S
Biometry Section, Industrywide Studies Branch, Natl. Inst. for Occupational Safety and Health, Robert A. Taft Laboratories, Cincinnati, OH, 45226
Ann NY Acad Sci; 381:54-61 1982

A proportionate mortality ratio (PMR) study was conducted of deceased members of the Oil, Chemical and Atomic Workers Union in Texas City, Texas in order to determine whether unusual patterns of cancer mortality exist in petrochemical plants and refineries. A total of 264 white union members who died after 1947 were included in the study, and two refineries (A and B) were analyzed in depth. In Refinery A, the PMR for nonmotor vehicle accidents was elevated (12 deaths observed vs 7.36 expected) and that for all cancer was only slightly elevated (1.18). However, excess deaths from skin cancer (PMR = 7.88), brain and CNS neoplasms (4 observed vs 1.57 expected), kidney cancer (2 observed vs 0.84 expected), and liver cancer (3 observed vs 0.64 expected) were observed. In Refinery B, excess deaths from lung cancer (6 observed vs 3.86 expected; not statistically significant) and hematopoietic and lymphatic cancer (4 observed vs 1.22 expected) were observed. Thus, deaths due to skin, brain, liver, and kidney cancer at Refinery A and deaths due to hematopoietic and lymphatic cancer at Refinery B were proportionately in excess. The relative excess of melanoma deaths observed at Refinery A appears to represent an occupationally related health problem. The relative excess of other cancer deaths at these refineries warrant further study. (18 Refs)

38. A PROGRESS REPORT: THE INVESTIGATION OF BRAIN TUMORS AT THE TEXAS DIVISION OF DOW CHEMICAL.

Reeve GR, Lloyd JW, Alexander V, Leffingwell SS, Waxweiler RJ, Bell H, Halperin WE
Natl. Inst. Occupational Safety and Health, U.S. Dept. Health and Human Services, Cincinnati, OH, 45226
Ann NY Acad Sci; 381:62-72 1982

During the 6-mo period since this investigation was initiated, an increased risk of death due to brain tumor was linked with employment at the Texas Division of Dow Chemical by the results of case-control study based on county death certificates. Specifically, the county-based case-control study yielded an odds ratio of 2.54 with a 90% confidence interval of the odds ratio extending from 1.23 to 6.80. Additional investigations were initiated which resulted in the ascertainment of 25 brain tumor deaths among former Dow employees. Of these cases, 84% were initially employed between 1940 and 1946 and 64% can be described as glioblastomas or astrocytomas Grade III and IV. Detailed protocols have been developed for a sample-based cohort study and a series of in-plant case-control studies. The sample-based cohort study is nearing completion and the in-plant case-control studies are anticipated to begin in the near future. The study design serving as the framework of this investigation represents a modest departure from the traditional epidemiologic study designs. This sample-based approach was designed to circumvent or minimize the usual problems associated with the use of massive collections of data that have been partially automated, if at all. The anticipated benefits will be conservation of limited staff resources and a reduction of the time necessary to complete a large-scale epidemiologic investigation. (Author abstract) (5 Refs)

39. CASE-CONTROL STUDY OF BRAIN TUMOR DEATHS AMONG EMPLOYEES AT A CHEMICAL MANUFACTURING PLANT.

Bond GG, Cook RR, Shellenberger RJ, Daniel RL, Fishbeck WA
U. S. Epidemiology, Dow Chemical, Midland, MI, 77541
Ann NY Acad Sci; 381:73-82 1982

Recent studies have reported an increased risk of death from primary intracranial neoplasms among employees in the petrochemical industry. One of them, a NIOSH/OSHA county-based case-control study, suggested a twofold risk for having ever been employed at the Texas Division of Dow Chemical USA Using the case-control approach, we compared 24 brain tumor cases among employees at this large, diverse chemical plant in Texas with two sets of age-, race-, and sex-matched controls to determine if a risk could be associated with job assignment in a particular process area, with presumptive exposure to a major process chemical, or with a number of other occupationally related and unrelated variables. Results implicated no specific area or chemical. The only significant findings were an elevated odds ratio for being hired prior to 1950 and a negative correlation with employment greater than 10 years. Further, preliminary calculations of expected deaths from primary intracranial neoplasms among the employee cohort suggested there was no excessive risk. (Author abstract) (20 Refs)

40. BRAIN CANCER IN THE DU PONT COMPANY.

Karrh BW, Pell S
Corporate Medical Div., E. I. du Pont de Nemours and Co. Inc., Wilmington, DE, 19898
Ann NY Acad Sci; 381:91-96 1982

A study of brain cancer was conducted in the Du Pont Company to compare the Company's morbidity and mortality experience with that in the US population. Incidence in the Company from 1956 through 1979 was compared to incidence reported in the Third National Cancer Survey, 1969-1971. Mortality from 1957 through 1979 was compared to US mortality in 1968. The morbidity data were confined to active employees, whereas the mortality data included both active and retired employees. Neither data included former employees who left employment without a pension. During these study periods, there were 150 newly diagnosed brain cancer cases and 144 deaths from brain cancer. The data indicated that both morbidity and mortality in the company were essentially the same as in the general population. These results, however, do not preclude the possibility that there could be a group of workers in the company with an excess risk of brain cancer as a result of exposure to a carcinogen, although we are not aware of such a group. The identification of such a group, if it does exist, would have to be made by a case-control or prospective cohort study. Comparisons between male wage roll and salaried employees showed no difference in morbidity and no significant difference in mortality. (Author abstract) (Refs)

41. INVESTIGATION OF AN APPARENT INCREASED PREVALENCE OF BRAIN TUMORS IN A U. S. PETROCHEMICAL PLANT.

Alexander V, Leffingwell SS, Lloyd JW, Waxweiler RJ, Miller RL
Occupational Safety and Health Admin., United States Dept. Labor, Washington, DC, 20210
Ann NY Acad Sci; 381:97-107 1982

The occurrence of 20 primary brain cancer deaths among workers in a moderate-sized petrochemical production facility in Texas prompted a cohort mortality study and a brain tumor case-control study. The av age at death was 55 yr and the total length of employment ranged from 1 mo to greater than 35 yr, with a median value of 19 yr. The interval from first employment to death ranged from 3.5 yr to almost 36 yr, with a median of 24 yr. All cases were males; 18 were white, 2 black. All but one were native-born Americans. Comparison with county primary brain tumor death statistics revealed an approx plant-wide risk about 2x that of the county as a whole. Sixteen of the cases were identified as glioblastoma multiforme. No common job title, department code, or chemical exposure could be found in careful preliminary examination of the work histories of the affected employees. Potential suspect agents which could be responsible for the unusual occurrence of brain cancer at this plant include vinyl chloride and diethyl sulfate; however, careful examination of the work histories did not support a significant positive association with vinyl chloride. These tumors are likely the result of occupational chemical exposures since there is no good evidence implicating nonplant. general environmental factors as the cause of brain cancer excess. (57 Refs)

42. BRAIN TUMORS AMONG OPERATING ENGINEERS IN THE CHEMICAL AND PETROCHEMICAL INDUSTRY IN TEXAS AND LOUISIANA.

Nicholson WJ, Seidman H, Selikoff IJ, Tarr D, Clark E
Environmental Sciences Lab., Mount Sinai Sch. Medicine, City Univ. New York, New York, NY, 10029
Ann NY Acad Sci; 381:172-180 1982

A proportionate mortality analysis was conducted on the deaths of 590 members of an operating engineers union whose membership was predominantly from chemical and petrochemical industries; results were compared with those on the deaths of 742 members of the same union in the same geographic area who were employed mainly as construction and maintenance workers. There was a 22% excess mortality overall in both groups for the period 1970-80, with a 22% elevation in lung cancer and 73% elevation of brain tumors over expected amounts. The majority of the 18 deaths from brain tumors in both groups occurred at ages 50-69, with only one death occurring before age 40 and one after age 70. Significant increases in proportionate mortality ratios were found for all cancer, lung cancer, and brain tumors among individuals who had worked in chemical plants; those employed in construction and maintenance exhibited an 18% excess mortality for lung cancer, but brain tumors were less than expected based on general population rates. For those actually working in chemical plants, excess brain tumors were largely associated with work as chemical plant or refinery operators, who exhibited a four-fold increased risk of death. Data were not available to identify specific chemical agents associated with the observed excess malignant risk. (11 Refs)

43. BRAIN CANCER AMONG OCAW MEMBERS IN THREE TEXAS OIL REFINERIES.

Thomas TL, Waxweiler RJ, Crandall MS, White DW, Moure-Eraso R, Itaya S, Fraumeni JF
Environmental Epidemiology Branch, NCI, Bethesda, MD, 20205
Ann NY Acad Sci; 381:120-129 1982

The risk of brain cancer was investigated in populations of active and retired members of the Oil, Chemical, and Atomic Workers International Union (OCAW) employed in three Texas oil refineries and a case-control study of brain cancer deaths among active union members at two of the refineries. The proportionate mortality ratio (PMR: the ratio of observed to expected deaths), the proportionate cancer mortality ratio (PCMR), and the local two-county PCMR (CPCMR) were determined. PMR's for total cancer and circulatory diseases were significantly elevated and more prominent among active than retired union members. There were 27 deaths from malignant brain cancer compared with expected deaths of 11.8, 14.7, 18.4 in the PMR, PCMR and CPCMR groups, respectively. The difference between observed and expected brain tumor deaths was significant only for active members. Both PMR and PCMR were significantly elevated among active members in the three refineries combined. At two refineries, there was greater than two-fold relative excess in brain tumor deaths among union members. Brain tumor deaths were excessive among all age groups, but the PMR was significant only among decedents in the 50-64-yr age group. The case-control study of two refineries suggested three employment categories at increased risk for brain tumors: the 'motor oil' category, the 'maintenance and labor' category, and the 'receipt and movement' category. However, the numbers of individuals in this study were small. More definitive studies are necessary to determine the risks and identify the specific exposures that may be responsible. (17 Refs)

44. A REPORT ON BRAIN TUMORS FROM A RETROSPECTIVE COHORT STUDY OF REFINERY WORKERS.

Wen CP, Tsai SP, Gibson RL
Gulf Science and Technology Co., P.O. Box 2100, Houston, TX, 77001
Ann NY Acad Sci; 381:130-138 1982

Standardized mortality ratio (SMR) analysis was conducted for a total of 17,521 employees of one full-service refinery in Texas, at which fuels, lubricants, and various petrochemicals, but not vinyl chloride, were manufactured. Vital status was successfully determined for nearly 90% of the male employees; 4,766 deaths were recorded for the study period (1935-79). The overall SMR for the population was 0.89 for all causes of death, and 0.97 for malignant and benign brain neoplasms. There were 30 brain tumor deaths, malignant, benign, or of unspecified nature; 25 in white males and 5 in nonwhite males; the worker population was 17% nonwhite. Age at death for the 30 brain tumor patients averaged 57.2 yr; the mean year of hire was 1934; and the mean year of death was 1966. Length of employment for the group with brain tumors ranged from 8 days to 43 yr, with a mean of 23 yr. A preliminary survey of job assignments of those workers dying from brain tumor has not revealed any significant clustering compared to the total cohort. A separate study of 443 benzene workers employed from 1952-76, 1,005 solvent-dewaxing workers employed from 1935-76, and a control group of 2,140 workers at the same plant, revealed no significant excess brain cancer in any group. There seems to be no significant increased risk of brain tumor among workers at this Texas refinery. (18 Refs)

45. MORTALITY PATTERNS IN EIGHT U. K. OIL REFINERIES.

Alderson M, Rushton L
Inst. Cancer Res., Sutton, Surrey, England
Ann NY Acad Sci; 381:139-145 1982

The patterns of mortality are described for 35,000 male employees, with a minimum of 1 year's continuous service, who worked at 8 refineries in the UK in the period 1 January 1951-31 December 1975. The trace rate of those involved was 99.8%. Overall the ratio of observed to expected deaths was 0.84 (O = 4,406, E = 5,259.9 p less than 0.00001). The numbers of deaths for many of the chronic degenerative diseases were lower than 'expected'. The number of observed deaths from all cancers were appreciably less than expected (O = 1,147, E = 1,286.4, O/E = 0.89, p = 0.00006). Lung cancer was particularly reduced (O = 416, E = 532.7, O/E = 0.78, p 0.00001); there was no excess of leukemia (in workers including some exposed to benzene). Other comparable studies have suggested an excess of gastrointestinal cancer. In the present study deaths from esophageal, stomach, intestinal, and rectal cancer were slightly raised for all workers (O = 346, E = 328.6, O/E = 1.05, p less than 0.4); this was particularly true for those joining before 1950 with long service and increased latent interval. There were also excesses based on small numbers of deaths from nasal cancer (O = 7, E = 3.1, O/E = 2.24, p less than 0.05), and melanoma (O = 14, E = 6.5, O/E = 2.16, p less than 0.01). There was no evidence of an excess of brain tumors (O = 36, E = 44.8, O/E = 0.80, p less than 0.2). (Author abstract) (18 Refs)

46. BRAIN CANCER: ISSUES AND DILEMMAS.

Hanis NM, Holmes TM, Newill VA, Smith FR, Smith LG
Exxon Corporation, East Millstone, NJ, 08873
Ann NY Acad Sci; 381:83-90 1982

A cohort study covering the 8 yr period, 1970-1977, identified eight deaths attributed to brain cancer among employees at a refinery/chemical plant. Five of the cases were primary brain cancers and three were either metastatic from another site or the site was undetermined. A ninth case of brain tumor unspecified was identified. Five primary brain cancers would have been expected, based on national statistics. Some issues and dilemmas related to such a cohort study were discussed. (Author abstract) (4 Refs)

47. CORRELATION OF OCCUPATION AND KARYOTYPE IN ADULTS WITH ACUTE NONLYMPHOCYTIC LEUKEMIA.

Golomb HM, Alimena G, Rowley JD, Vardiman JW, Testa JR, Sovik C
Box 420, 950 East 59th St., Chicago, IL, 60637
Blood; 60(2):404-411 1982

Seventy-four adult patients with acute nonlymphocytic leukemia (ANLL) were classified retrospectively as to whether or not they had had occupational exposure to insecticides, chemicals and solvents, or petroleum products. Fifty-eight patients were considered nonexposed and 16 were considered exposed. The chromosome banding pattern was abnormal in 37 of the 74 patients (50%). Twenty-five of the 58 (43%) nonexposed patients had a clonal chromosome abnormality, compared with 12 of the 16 (75%) exposed patients (p = 0.02). Only 2 of 23 (8.7%) females with an abnormal karyotype were exposed, whereas 10 of 14 (71%) males with an abnormal karyotype were exposed. Either a-5/5q- or a-7/7q- was present in 67% of the exposed patients with a chromosome abnormality, compared to 28% of the aneuploid nonexposed patients. The-7/7q- abnormality was present in 7 of the 12 (58.3%) exposed patients, vs 5 of the 25 (20%) nonexposed patients with abnormal karyotypes (p less than 0.05). The-5/5q- anomaly was observed in 4 of the 12 (33%) exposed patients and in 4 of the 25 (16%) nonexposed abnormal patients. Our study supports the observation that a subset of patients with ANLL de novo have a history of occupational exposure and a unique pattern of chromosome abnormalities. (Author abstract) (18 Refs)

48. CANCER MORTALITY AMONG THREE SWEDISH MALE ACADEMIC COHORTS: CHEMISTS, ARCHITECTS, AND MINING ENGINEERS/METALLURGISTS.

Olin GR, Ahlbom A
Preventive Occupational Medicine Unit, Royal Inst. Technology, S-100 44 Stockholm, Sweden
Ann NY Acad Sci; 381:197-201 1982

Cancer mortalities were investigated in three cohorts of professionals graduating from the same academic institution during the same period of time (1930-59). The study included 820 chemists, 581 mining engineers, and 657 architects, of which 83, 49, and 59, respectively, were deceased. Standard mortality ratios comparing the three groups to the overall Swedish male population showed that all of them had ratios well below 100. Relative risk rates were not significantly different among the three groups. The neoplasm rate differed among the cohorts, with the relative risk for chemists being 2.5 x that of architects and for mining engineers 1.8 x. The difference in neoplastic mortality between the architects and chemists seems to be due to different rates of death among two neoplastic code-groups: leukemia/lymphoma (including 3 cases of Hodgkin's disease), and glioma. Of 32 neoplastic deaths among the chemists, 5 were attributed to gliomas. Methylnitrosourea was used routinely without special precautions for diazosynthesis in Swedish educational laboratories up until the middle 1960's, but the significance of this fact to the present results has not been determined. (8 Refs)

49. BRAIN AND CENTRAL NERVOUS SYSTEM CANCER MORTALITY IN U. S. RUBBER WORKERS.

Symons MJ, Andjelkovich DA, Spirtas R, Herman DR
Occupational Health Studies Group, Sch. Public Health, Univ. North Carolina, Chapel Hill, NC, 27514
Ann NY Acad Sci; 381:146-159 1982

Since 1963 the observed mortality experience of BCNS cancers among rubber workers appears to be very comparable to that expected. A possible exception to this statement is the experience of one plant in Akron, Ohio, reported by Monson and Nakano. Excesses in earlier years may also be localized to one or two companies. The results of a case-control study did not support a hypothesized association of elevated BCNS cancer risk with exposures in the tire building/tire assembly segments of the rubber tire manufacturing process. The direction of future epidemiologic studies would benefit by the assembly of as large a number of cases as possible and should focus on calendar periods of exposure, make allowance for a latent period, and include retrospective industrial hygiene assessments of the specific exposures. (Author abstract) (28 Refs)

50. IARC MONOGRAPHS ON THE EVALUATION OF THE CARCINOGENIC RISK OF CHEMICALS TO HUMANS: THE RUBBER INDUSTRY.

IARC Working Group

Div. Environmental Carcinogenesis, International Agency for Res. on Cancer, Lyon, France

IARC Monogr Eval Carcinog Risk Chem Hum 28: 486 pp., 1982.

The carcinogenic risks of exposures to workers in the rubber industry is evaluated. Manufacturing of tires, and other rubber goods are considered with respect to exposures incident to the mixing of elastomers with chemicals and their subsequent conversion into finished products. An historical overview is presented with discussion of the origins of the rubber industry and the developing rubber industry and its occupational health hazards. Manufacturing processes are described for tires, tubes, remolds, and retreads; general rubber goods such as wire and cables, belting, hose, ebonite, rubber footwear, food processing equipment, aircraft deicing equipment, automobile parts; proofed rubber fabrics, adhesives and sealants; and dipped latex products and forms. The chemistry of rubber compounding is reviewed. Exposures in the workplace are discussed with respect to controls, protective equipment, work practices; studies of exposures in the workplace; and biological monitoring. Biological effects include carcinogenic, mutagenic, and teratogenic effects of exposure to accelerators, antioxidants, curing agents; solvents; monomers; talc; carbon blacks; aromatic amines; mineral oils, tar products and polycyclic aromatic hydrocarbons; nitroso compounds; phthalate and adipate esters; and curing fumes and other emissions. Effects in humans other than cancer including dermatologic respiratory, and reproductive, are discussed. Epidemiological studies of carcinogenicity in humans are reviewed: definite associations with cancer of the urinary bladder, lymphatics, stomach, lung, and perhaps, other sites, have been made. (367 Refs)

51. MUTAGENICITY IN URINE OF WORKERS IN NAVAL INDUSTRY (MEETING ABSTRACT).

Rueff J, Laires A, Gomes M, Borba H, Halpern M

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Twelfth Annual Meeting of the European Environmental Mutagen Society, June 20-24, 1982, Dipoli, Espoo, Finland. European Environmental Mutagen Society 250 pp., 1982.

The demonstration that human cancer can be caused by exogenous factors led to a tendency to concentrate on discrete compounds as being directly implicated in the etiology of certain cancers. The real situation, however, seems rather to be the result of complex interactions between multiple environmental and host factors. This fact raises the question of whether the finding of mutagenicity in body fluids may per se indicate hazardous exposure since data linking levels of body mutagens to cancer risk are still scarce. Our study was aimed to obtain additional information on that question. Mutagenecity in the urine of 17 men occupationally exposed to mineral oils and ferric oxide particles and 16 age matched men only exposed to mineral oils was investigated using the Ames assay. Both groups included smokers and non-smokers. Urine samples were collected after 8h workday, concentrated and tested following published procedures. Mutagenic activity was significantly higher in the first group, the difference being more pronounced than that between smokers and non-smokers. Smoking tends to act synergistically with mineral oils plus ferric oxide particles exposure. (4 Refs)

52. MORTALITY, CANCER INCIDENCE, AND SICKNESS-ABSENCE IN PHOTOGRAPHIC PROCESSORS: AN EPIDEMIOLOGIC STUDY.

Friedlander BR, Hearne FT, Newman BJ

Health, Safety and Human Factors Lab., Eastman Kodak Co., Rochester, NY, 14650

JOM; 24(8):605-613 1982

An epidemiologic investigation of a 1964 cohort of 478 photographic processors in nine Eastman Kodak Color Print and Processing (CP and P) laboratories in the continental United States was undertaken. Analysis of pre-1965 environmental data indicated that chemical exposures were within the standards applicable at the time. The results showed no significant excess mortality, sickness-absence or cancer incidence. The processing cohort's mortality experience after 16 yr of follow-up compared favorably with that of two industrial control populations. The present study represents (to our knowledge) the first published occupational epidemiology investigation that specifically examines the health of workers engaged in large-scale commercial photofinishing operations. (Author abstract) (16 Refs)

53. MUTAGENIC, CANCEROGENIC, AND EPIDEMIOLOGIC STUDIES IN WORK PLACES (MEETING ABSTRACT).

Bronzetti G, Del Carratore R, Bauer C, Corsi C, Nieri R, Paolini M, Nanni N, Giagoni P, Berlincioni M, Vannucchi C, Maltoni GC, Buiatti E, Geddes M, Seniori RCNR

Istituto di Mutagenesi and Diff., Via Svenzia 10, Pisa, Italy

Twelfth Annual Meeting of the European Environmental Mutagen Society, June 20-24, 1982, Dipoli, Espoo, Finland. European Environmental Mutagen Society 250 pp., 1982.

In recent years, the development and utilization of short-term bioassays was concentrated in the study of pure chemicals. Only recently those biossay systems have been applied to the evaluation of genetic effects in work places and complex environmental mixtures. However, there is not a lot information concerning the risk in work places. Our scientific program is to study the situation in Santa Croce, near Florence, better known as hide and leather area. In fact in this part of Tuscany's region is concentrated the work of tanning, one of the first over the world. The high contamination is not only in Santa Croce but in surrounding places. During last summer in the Arno river all fish died from water contaminated by the industrial and urban wastes. The coupling of analytical and genetic studies is object of our work. From our work we found high mutagenic and cancerogenic risks in those places. The genetic effects such as mitotic gene conversion, mitotic crossing over and point (reverse) mutation were determined using D7 strain of Saccharomyces cerevisiae with metabolic activation. (no Refs)

54. SAMPLING AND DETERMINATION OF AIRBORNE 2,4,7-TRINITRO-9-FLUORENONE IN THE COMPUTER ROOM ENVIRONMENT (MEETING ABSTRACT).

Eckhardt JG, Wilcox C

General Products Division, IBM Corporation, Tucson, AZ, 85744

Environmental Analytical Chemistry, Airborne Mutagens and Carcinogens, June 16-18, 1982, Provo, Utah. Electric Power Research Institute 44 pp., 1982.

Recent interest in 2,4,7-Trinitrofluorenone (TNF) began when results from Ames tests were reported to be mutagenic. TNF has been used in electrophotographic technologies for the data processing industry. To evaluate customer and operator

safety, a method was developed for determining TNF in the low ng/m3 range in the workplace air of a computer room. This method involves trapping airborne particles on a Teflon membrane filter, extracting the TNF from the filter and determining the TNF using HPLC (high pressure liquid chromatography) with UV detection. Although both normal and reverse phase chromatography can be used to perform this determination, the effects of the interfering compounds also collected on the filter are least severe in the reverse phase mode. The detection of TNF by this method is linear over the range of 2 ng/m3 to 1 mg/m3. The mean extraction recovery over this concentration was greater than 95%. Detection limits for TNF range from less than .001 to less than .004 ug/m3. All results show no exposure to hazardous levels of TNF in the environment. (no Refs)

OCCUPATIONAL FACTORS: GENERAL

55. PARENTAL OCCUPATIONS AND CANCER IN CHILDREN. A CASE-CONTROL STUDY AND REVIEW OF THE METHODOLOGIC ISSUES.

Gold EB, Diener MD, Szklo M

Dept. Epidemiology, Johns Hopkins Univ. Sch. Hygiene and Public Health, 615 N. Wolfe St., Baltimore, MD, 21205

JOM; 24(8):578-584 1982

The findings of a number of published reports have been conflicting with regard to the role of parental occupation in the occurrence of cancer in children. In the present study, the occupations and occupational exposures of parents before and after the birth of a child who later developed leukemia or a brain tumor (cases) were compared with the occupational experience of parents of children with other cancers and of normal children. Forty-three children diagnosed with leukemia from 1969 through 1974 and 70 children diagnosed with brain tumors from 1965 through 1974 in the Baltimore Standard Metropolitan Statistical Area were ascertained. The findings of the present study do not demonstrate a relationship between parental occupation and occurrence of leukemia or brain tumors in the offspring. The results of this and other studies are evaluated in the context of a number of important but difficult methodologic issues that arise in studies of this potentially significant subject area. (Author abstract) (13 Refs)

56. TECHNICS OF EXAMINATION OF SISTER CHROMATID EXCHANGE AND THEIR APPLICATIONS.

Luo J, Liu M, Yu Z, Huang X

Guangdong Acad. Medicine and Pharmacy, Guangdong Province, People's Republic of China

Zhonghua Yufangyixue Zazhi; 15(6):376-378 1981

Human peripheral lymphocytes and mice were used to test the carcinogenicity and the mutagenicity of a pesticide and of some industrial chemicals. Sister chromatid exchange was used as the index for carcinogenicity and mutagenicity. Chromatids were labeled with 5-bromodeoxyuridine. The fraction of sister chromatid exchange in the cells of industrial workers, of residents in an arsenic contaminated area, and of healthy persons was measured and compared. The healthy persons had a significantly lower fraction of sister chromatid exchange than the other people. (3 Refs) (In CHI)

EPIDEMIOLOGICAL FINDINGS INVOLVING SPECIFIC AREAS

57. CHILDHOOD ACUTE LEUKAEMIA IN A TROPICAL POPULATION.

Williams CK, Folami AO, Laditan AA, Ukaejiofo EO

Dept. Hematology, Univ. Coll. Hosp., Ibadan, Nigeria

Br J Cancer; 46(1):89-94 1982

The clinical features of acute leukemia (AL) were documented prospectively among Nigerian children residents in the South-Western rain-forest area of the country, and compared to the features in Caucasians. Twenty-nine of 51 newly diagnosed cases of AL occurred in childhood, including 19 cases of acute lymphoblastic leukemia (ALL) and 11 of acute myelogenous leukemia (AML). The incidence of ALL and AML in Ibadan children was the same, estimated as 0.8 x 10(-5). Thus childhood ALL was about one-third as common in Ibadan as in most developed Caucasian countries. ALL and AML occurred most frequently in the age groups 10-14 and 5-9 yr respectively. Six cases of AML were associated with chloromas. Only two of the ALL patients survived more than 1 yr after standard chemotherapy. The poor result appeared to be attributable to frequent occurrence among the ALL patients of adverse prognostic factors such as hyperleukocytosis, age less than 2 or greater than 7 yr, L2 morphology and low PAS reactivity of the lymphoblasts. Unknown environmental factors are believed to be responsible for the unusual features of AL in children in Ibadan. (Author abstract) (25 Refs)

58. THE EPIDEMIOLOGY OF CANCER IN CHINA.

Armstrong B

Dept. Medicine, Univ. Western Australia, Queen Elizabeth II Medical Centre, Nedlands, Western Australia, Australia

World Health Forum; 3(1):95-101 1982

Epidemiology of cancer in China based on a retrospective survey of cancer mortality with additional data on the main cancer sites is reviewed. A total of 18,439,072 deaths were surveyed and 1,868,310 (10.1-11.3% in males and 8.8% in females) were attributed to cancer. The highest level of diagnosis and treatment and the best available criterion for the diagnosis of cancer are summarized. For all sites of cancer together the estimated mortality rates in China were 119.6/100,000 for males and 80.7/100,000 for females, adjusted to age distribution of the 'world' population. Among countries reporting mortality by site of cancer, China has the highest mortality from esophageal cancer with annual rates of 31.7/10,000 in males and 15.9/100,000 in females. Cancer of the stomach is the most common form of cancer leading to death in China. The mortality rates are 32.4 and 15.9/100,000 in males and females, respectively. The rates are substantially lower than those in Japan. Liver cancer (presumed primary) is the third more important cancer as a cause of death in China and accounts for 15% of all cancer deaths. Mortality rates of the cancer of the cervix are generally higher in the rural than in urban areas. An unusual feature of the high rate of lung cancer in Chinese women, particularly Cantonese women, is the relatively high proportion of the tumors which are adenocarcinomas. The county with highest rates of large bowel cancer is an area of endemic schistosomiasis in Zhajiang province. The geographic distribution of nasopharyngeal cancer within China is quite remarkable, with a very high incidence area centered on Guandong province in the south. (11 Refs)

59. SEROLOGICAL STUDIES ON NASOPHARYNGEAL CARCINOMA AND CERVICAL CANCER IN CHINA.

Zeng Y

Inst. Virology, Chinese Acad. Medical Sciences, 100 Ying Xing Jie, Xuan Wu Qu, Beijing, 100052, People's Republic of China

Excerpta Med Int Congr Ser; 571:380-388 1982

A serological study on Epstein-Barr virus (EBV) infection was performed in areas of high and low risk for nasopharyngeal cancer (NPC). A micro-complement fixation test for antibody to EBV in sera of 2,300 normal individuals of all ages indicated a positive reaction in 90-100% of children aged 3-5 yr. The geometric mean titer (GMT) from the healthy population over age 20 was significantly higher in areas of high NPC risk. This type of variation may reflect reactivation of EBV in people living in the NPC high risk area and which might be related to the occurrence of NPC. Results of serologic mass surveys of NPC are reported in Zangwu county in 1978-1980. The incidence of antibody to herpes simplex virus (HSV) 1 and 2 was determined in normal women in both a high- (Jienan county) and a low-risk (Beijing) area for cervical cancer and in patients. There was no marked difference in frequency of antibody to HSV-1 in the cervical cancer patients and in the controls from high and low risk areas. However, in the cervical cancer group, the GMT of antibody to HSV-1 was a little higher than that in the control group; this may be due to cross-reaction to antigen between HSV-1 and HSV-2. A study of age-specific incidence of HSV infection in areas of high and low cervical cancer risk indicates a relationship between early and severe infection of HSV-2 and high risk of cervical cancer. While the age-specific incidence of HSV-2 infection in China is similar to that in some western countries, the social system and life-style are quite different, indicating some other mode of infection than venereal transmission. (22 Refs)

60. NASOPHARYNGEAL CARCINOMA AND CERVICAL CARCINOMA IN TAIWAN, CHINA.

Lin TM

Natl. Taiwan Univ. Coll. Medicine, Inst. Public Health, 9 Chungshan South Road, Taipei, Taiwan, Republic of China

Excerpta Med Int Congr Ser; 571:398-407 1982

Some epidemiological studies on nasopharyngeal cancer (NPC) and cervical cancer (CC) in Taiwan are presented; possible association with oncogenic viruses is also discussed. Epidemiological data presented are based on surveys since neoplasms are not reportable in Taiwan. The age-standardized death rate (per 100,000 of population) for NPC in 1979 was 3.3 (4.6 for males, 1.9 for females). As in other countries, the rate was higher in the Chinese population. The death rate has increased slightly during the past 15 yr. Morbidity incidence from 1969-1971 of NPC was estimated at 5.4. Patients with NPC show a significantly higher anti-virus capsid antigen (VCA) titer than neighborhood controls, their families, and NPC family members. A synergistic interaction with NPC was found between all pairs of factors of smoking, ventilation, nasal balsam or oil, herb drugs, and anti-VCA titer, except that between herb drugs and ventilation. The age standardized death rate (per 100,000 of female population) for CC in 1979 was 6.9, which ranked CC fourth among causes of death in females. The death rate due to CC increased markedly after age 40 yr. CC death rates were higher in those who were ever married, compared with those who were single, widowed, or divorced. (6 Refs)

61. TREND IN TUMOR INCIDENCE AND POSSIBLE RELATION TO CANCER SCREENING.

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Fortschr Med; 100(23):1073-1078 1982

Trends in incidences of various malignant tumors and their relation to participation in screening programs are discussed with emphasis on the current situation in the Federal Republic of Germany. In general, absolute numbers of cancer cases are increasing as the result of changes in the age-distribution of the general population. The incidence of lung cancer is increasing, while that of gastric cancer is decreasing. In industrial nations the mortality due to intestinal, rectal, and prostatic cancers among men is rising. Among women, the incidences of uterine and gastric cancers are decreasing, while those of lung and breast cancers are increasing; trends in incidences of rectal and intestinal cancers are not uniform. Participation in screening programs generally correlates inversely with mortality. Participation is highest among age groups with low incidences of cancer; screening therefore has limited effect on the epidemiology of cancer. In one period the mortality due to colon, rectum, breast, or prostate was higher than expected in spite of cancer screening. In contrast, cervical cancer mortality was lower than would be expected from screening. Because the site of many uterine cancers is not recorded, mortality rates for cervical cancer are not very useful. (20 Refs) (In GER)

62. MORTALITY FROM MESOTHELIOMA OF THE PLEURA DURING 1968-78 IN ENGLAND AND WALES.

Gardner MJ, Acheson ED, Winter PD

Medical Res. Council's Environmental Epidemiology Unit, Univ. Southampton, Southampton General Hosp., Southampton SO9 4XY, England

Br J Cancer; 46(1):81-88 1982

The geographical distribution of mortality from mesothelioma of the pleura during the yr 1968-78 in England and Wales has been studied using extracts from the death records held by the Office of Population Censuses and Surveys. Using the national death rate as standard, Local Authority areas with raised mortality are identified. The patterns are somewhat different for each sex. In men the high-mortality areas are mainly the major ports where shipbuilding and repairing have been concentrated, whereas in women areas where gas masks were manufactured are predominant. In both sexes there are also high death rates on the eastern side of London. Nearly all the areas of high mortality are known to have had a major asbestos-using industry in the past. Over the 11-yr period the annual number of deaths from pleural mesothelioma rose by approx 75%. This marked increase was virtually confined to men, in whom the number of deaths had reached almost 2,000 per annum by 1978. The indications are that the effect of past high exposures, in particular to amphibole asbestos, have not yet reached a peak in terms of mortality. On the other hand imports and usage of amphiboles, particularly crocidolite, have decreased rapidly since the mid-1960s, and dust levels in the working environment have improved even more radically. (Author abstract) (20 Refs)

63. EPIDEMIOLOGY OF LARYNGEAL CANCER (MEETING ABSTRACT).

Ramadan MF, Steil PM, Pharaoh P
Department of Oto-Rhino-Laryngology and Community Health, University of Liverpool, Liverpool, England
Clin Oncol; 8(1):78 1982

Laryngeal mortality in England and Wales was studied for the years 1911-1978. The adjusted mortality rate in men increased sharply from 28 per million in 1911 to reach a peak in the 1930's of 60 per million, then there was a notable decline through the 1940's and 50's to the 1960's when it started to level off. The adjusted mortality rate in 1978 was 25 per million. This decline may be related to a similar decline in alcohol consumption in this country which occurred some 30-40 years earlier. There was no correlation with cigarette smoking as the decline in the adjusted mortality rate continued in the face of sharp increases in cigarette smoking. A cohort analysis of laryngeal cancer deaths in England and Wales was carried out, which showed that the logarithm of mortality rate increased in a linear fashion with the age of the population and that the 1861, 1871 cohorts were at higher risk than successive cohorts. There was a significant risk of laryngeal cancer among people in the alcohol industry both in this country and abroad. There is also a significant correlation between the incidence of laryngeal carcinoma and consumption of alcohol in fourteen western countries in men but not in women. The mortality rate of laryngeal cancer varies between countries. The annual incidence in Japan is from 3/100 000 men, whereas in Spain (Zaragazo) it is 15/100,000. Variation is also noted between different areas in the same country. The incidence in men varies from 23 in rural areas to 49 in large cites in Norway. There is also a different incidence in the USA between black and white population. In this country laryngeal cancer mortality varies considerably in different socio-economic classes; the standard mortality ratio (1970-1972) for Class I was 65 while Class V had a standard mortality rate of 194. (no Refs)

64. DISTRIBUTION OF MALIGNANT LARYNGEAL NEOPLASMS IN LOWER SILESIA DURING THE PERIOD 1969-1978.

Baran I, Okwieka K, Malczewski M, Czajczynski Z, Zatonski D, Kuzniar J
Klinika Otolaryngologiczna, Instytut Chorob Ukladu Nerwowego i Narzadow Zmyslow AM, 50-107 Wroclaw, Poland
Otolaryngol Pol; 36(2/3):107-110 1982

The regional distribution of malignant laryngeal neoplasms in Lower Silesia during the period 1969-1978 was studied. A total of 1,115 new cases were diagnosed, corresponding to an incidence of 4.14/100,000 population (4.13 in urban areas and 4.12 in rural areas). The incidences in the different regions ranged from 1.6 to 8.0, reflecting differences in air pollution generated by industrial processes. The insignificant difference in the incidence between urban and rural areas is probably due to the fact that most of the rural population is employed in industry. (no Refs) (In POL)

65. RECENT TRENDS IN CANCER INCIDENCE IN KIEV 1969-1979.

Guslitser LN, Matvilchuk YD
R. Kavetsky Inst. for Oncology Problems, 252 127 Kiev, USSR
Neoplasma; 29(2):129-134 1982

The analysis of the trends of age-adjusted incidence rates of malignant tumors in the city of Kiev in the yr 1969-79 revealed a gradual increase of the majority of individual sites, mainly of the malignant tumors of rectum, lymphoid and hematopoietic tissues in both sexes and of breast in females. On the other hand a decrease of incidence rates of the malignancies of skin, lip and stomach in both sexes and of esophagus, lung and uterine cervix in females was noted. These investigations formed the basis of the prognosis study of incidence rates of malignant tumors in Kiev until 1990. The importance of the study of incidence rates and trends of individual sites of malignant tumors for the investigation of their factors and causes in urban conditions and environment is emphasized. (Author abstract) (8 Refs)

66. CUTANEOUS MALIGNANT MELANOMA IN SCOTLAND.

MacKie RM, Hunter JA
Dept. Dermatology, Univ. Glasgow, Glasgow, Scotland
Br J Cancer; 46(1):75-80 1982

In view of the concern over the rising incidence of malignant melanoma in many parts of the world, and the suggestion that emigrants of Scottish and Irish descent have a higher incidence of melanoma in North America and Australia, a Scottish Melanoma Group has been formed to study epidemiological, pathological and therapeutic aspects of the tumor. In 1979, 260 histologically proven primary cutaneous malignant melanomas of the skin presented. This represents an incidence of 5.1/10(5) for Scotland as a whole. Studies over the next 5 yr will determine whether the incidence of melanoma is rising in Scotland as rapidly as in other parts of the world. (Author abstract) (24 Refs)

67. OCCUPATIONAL CATEGORIES AMONG BRAIN TUMOR CASES RECORDED IN THE CANCER REGISTRY IN SWEDEN.

Englund A, Ekman G, Zabrielski L
Bygghalsan, Box 26055, S-100 41 Stockholm, Sweden
Ann NY Acad Sci; 381:188-196 1982

Data on reported cases of brain tumors by occupation as recorded in the Swedish Cancer Registry and the Cancer Environment Registry are discussed. The Cancer Registry data make tracing of occupational relationships difficult, but the Cancer Environment Registry includes a 9-digit personal identification number, and therefore makes individual tracing of statistics possible. Several occupations, including medical workers, welders, glass workers, rubber industry, and painters, had risk ratios higher than 1.00, but in all these groups other than the medical workers the lower confidence limit was less than 1.00. Excess incidence of tumors, particularly rare ones, was observed for the region near Malmo in southern Sweden possibly due to more accurate pathology diagnosis. Brain tumor incidences exceeded 12 per 100,000 for glass workers rubber and plastics workers, and two groups of medical workers. The chemistry industry does not belong to high incidence group, but the mineral oil refinery, and especially the rubber industry, seem to be associated with a higher incidence of brain tumors in general and glioblastomas in particular. (5 Refs)

68. ENVIRONMENTAL FIBER-INDUCED PLEURO-PULMONARY DISEASES IN AN ANATOLIAN VILLAGE: AN EPIDEMIOLOGIC STUDY.

Artvinli M, Baris YI
Dept. Chest Diseases, Sch. Medicine, Hacettepe Univ., Ankara, Turkey
Arch Environ Health; 37(3):177-181 1982

This study was designed to determine the prevalence of pleural mesothelioma and other malignancies in the Anatolian village of Tuzkoy, where neither asbestos nor any environmental carcinogen has been detected. Another village (Kizilkoy) located 12 km from Tuzkoy was selected as a control. Three hundred twelve subjects from Tuzkoy who were at least 25 yr of age and 95 subjects from Kizilkoy were studied. Analysis of x-rays of the Tuzkoy group revealed that subjects had calcified pleural plaques (17%), pleural thickening (10.5%), obscured costophrenic angles (15%), and diffuse interstitial pulmonary fibrosis (12.1%). Sixty-seven deaths were recorded in Tuzkoy during the previous 3 yr, 41 of which resulted from malignant diseases. There were no x-ray abnormalities or deaths resulting from malignancies in the control group. Because of the high incidence of mesothelioma and lung cancer which usually results from asbestos exposure, the presence of asbestos in Tuzkoy was investigated, but none was detected in spite of Tuzkoy's volcanic location. Nevertheless, zeolite, an asbestiform mineral, was detected in the stones of buildings and in the village soil, as well as in the lung and pleura of the patients during biopsy. Thus, this mineral was considered to be responsible for the fiber-induced pleuro-pulmonary diseases in Tuzkoy. No zeolite was found in the soil and stones of the control village. (Author abstract) (17 Refs)

69. TRENDS IN BRAIN CANCER TUMOR MORTALITY AND MORBIDITY IN THE UNITED STATES.

Garfinkel L, Sarokhan B
Dept. Epidemiology and Statistics, American Cancer Society, New York, NY, 10017
Ann NY Acad Sci; 381:1-5 1982

Statistical and epidemiological information on the patterns of brain cancer mortality and morbidity in the United States over the last 40 yr are presented based on data from volumes of the annual Vital Statistics of the United States and from the NCI Surveillance, Epidemiology, and End Results (SEER) Program, 1973-1977. Mortality rates from cancer of the brain and CNS by sex and race are shown for the period 1950-1977; death rates from tumors of the brain and CNS are given by race from 1940-1977. Apparent increases in malignant tumors may have been due to the changes of reporting on death certificates. Mortality by age shows similar patterns in males and females, with the lowest rates in the teen years, increasing with age up to the 70-74 yr-category in males and the 65-69-yr category in females. Histologic types in brain cancer cases reported to the NCI SEER program for 1973-1978 show that glioblastoma multiforme was the most frequent histologic type reported (greater than 50%), with Grade 1 and grade-not-specified astrocytoma (about 12%) being the next most common type. Distributions were similar for both sexes, but differed between persons less than 20-yr-old and others. (10 Refs)

70. DESCRIPTIVE EPIDEMIOLOGY OF CENTRAL NERVOUS SYSTEM NEOPLASMS IN LOS ANGELES COUNTY.

Preston-Martin S, Henderson BE, Peters JM
Dept. Family and Preventive Medicine, Univ. Southern California Sch. Medicine, 2025 Zonal Ave., Los Angeles, CA, 90033
Ann NY Acad Sci; 381:202-208 1982

The results of the Los Angeles County Cancer Surveillance Program, in which data were abstracted from hospital charts according to sex, race, address, religion, birthplace, occupation, and industry, with details of pathological diagnosis, are discussed. Age-adjusted annual incidence for gliomas was higher for males than females and for whites than blacks, but meningioma rates were higher in females and nonwhites. Glial and meningeal tumors accounted for 86% of all CNS neoplasms in both males and females, but gliomas comprised a much higher proportion of CNS tumors in males (65%) than females (48%). No clear association of CNS tumor and social class was found, but rates in the two highest classes exceeded those for the two lowest classes. High proportional incidence rates (PIRs) for CNS tumors, particularly meningiomas, were found among Jewish residents, and among women born in Eastern Europe. Industries of employment with elevated PIRs included manufacture of transportation equipment (85 cases; PIR = 140, including 73 cases in the aircraft industry; PIR = 146), lumber and wood products (5 cases; PIR = 252), beverage (7 cases; PIR = 263), apparel (8 cases; PIR = 251), printing and publishing (11 cases; PIR = 210), insurance (15 cases; PIR = 160), and colleges and universities (12 cases; PIR = 167). More than 5 cases and significantly elevated PIRs for CNS neoplasms according to job title of white males occurred for electricians and engineers. Several of the findings on elevated incidence of CNS tumors by industry were consistent with reports from other geographic areas. (10 Refs)

71. THE INCIDENCE OF PRIMARY INTRACRANIAL NEOPLASMS IN ROCHESTER, MINNESOTA, 1935-1977.

Kurland LT, Schoenberg BS, Annegers JF, Okazaki H, Molgaard CA
Dept. Medical Statistics and Epidemiology, Mayo Clinic, Rochester, MN, 55901
Ann NY Acad Sci; 381:6-16 1982

Incidence of primary intracranial neoplasms in Rochester, Minnesota, a city with no petrochemical industry, little heavy industry, no significant air pollution, and an unusually effective health care documentation system, is reported and discussed. Methods of diagnosis, age- and sex-specific incidence rates for gliomas and meningiomas are given for the 99% white population. In 43 yr there were 223 tumors diagnosed in 222 patients; nearly all gliomas and meningiomas were histologically confirmed. No significant changes in incidence rates were evident between the periods 1950-1964 and 1965-1977. The Rochester age- and sex-specific rates for all primary intracranial neoplasms are the highest reported in any population-based studies. The rates are about 2.5 times those based on the Connecticut Tumor Registry, which is based on a large number of data sources of varying quality. Age-adjusted rates for gliomas in Rochester during the period 1950-1977 were 6.2 (per 100,000 person-yr) for males, 4.9 for females, and 5.2 for both. Corresponding figures for meningiomas were 4.8, 6.1, and 5.5, respectively. The data in the present report could be used for comparison of an intensive study of persons at special risk, such as industrial exposure, provided that a complete follow-up of each member of such a population can be achieved. (6 Refs)

72. EPIDEMIOLOGICAL STUDY OF TUMORS OF THE CENTRAL NERVOUS SYSTEM IN OHIO.

Mancuso TF
Dept. Industrial Environmental Health Sciences, Graduate Sch. Public Health, Univ. Pittsburgh, Pittsburgh, PA, 15261
Ann NY Acad Sci; 381:17-39 1982

Historically, the first epidemiological lead of an excess risk of death due to malignancies of the brain and central nervous system among the former employees of the rubber industry was in 1949, in a study correlating causes of death with prior employment designated on the death certificates for the state of Ohio in 1947. The geographical distribution of deaths (1955) due to histologically confirmed tumors of the CNS identified one county, Summit, of the 88 counties of Ohio, as having significantly more deaths than expected for ages 25-64. Summit County represents the principal rubber manufacture center in the US. A series of analyses were carried out which identified a higher death risk among rubber workers compared to non-rubber worker residents of Summit County according to histologically confirmed diagnoses of tumors of the CNS in 1963. Longitudinal employee cohort studies of four different companies engaged in the manufacture of rubber products, in the same state, Ohio, indicated a higher death rate due to tumors of the central nervous system. Epidemiological leads were cited in a broad industry survey comparison in which higher death rates due to neoplasms of the central nervous system were observed among workers in electrical machinery and paper and allied products as well as the rubber industry. Potential chemical linkage of the excess of CNS neoplasm deaths among rubber workers and workers in the rayon industry was explored. (Author abstract) (11 Refs)

OTHER EPIDEMIOLOGICAL FINDINGS

73. EPIDEMIOLOGY OF BREAST CANCER.

Marchant DJ
Tufts-New England Medical Center, Boston, MA
Clin Obstet Gynecol; 25(2):387-392 1982

The incidence of breast cancer (BC) and risks associated with BC are discussed. A number of factors have been associated with increased risk for BC including demographic, anthropometric, dietary, menstrual, reproductive, hormonal, genetic, and others, including a history of benign breast disease. Key risk factors include previous cancer of one breast, age, age at menarche, age at full-term pregnancy, age at menopause, and wt. The woman with previous cancer of one breast is at risk for cancer in the opposite breast. Studies indicate that the risk is approx 1% per yr. Evidence suggesting that estrogens play an important part in determining the hormonal milieu that favors the development of human BC exists. Risk factors noted in epidemiologic studies are associated with changes in the production of estrogen. Height and wt factors that contribute to increased risk in postmenopausal women can be explained by increased peripheral conversion of androgen to estrogen. The administration of estrogens to postmenopausal women may result in a small increase in the risk of BC. Growth rate of human malignant BC cells in tissue culture is enhanced by estrogens in physiologic concentration. Therapeutic strategies that are effective in the treatment of BC in premenopausal women can be explained on the basis of reduction or elimination of endogenous estrogens. Recent studies on the mechanism of action of estriol indicate that it is neither an impeded estrogen nor an estrogen antagonist when present in continuous of chronic fashion. Most investigators suggest that estrogen is preparative rather than carcinogenic. One of the risk factors that is alterable is obesity, particularly in the postmenopausal woman. (14 Refs)

74. THE INCIDENCE OF BREAST CANCER: ANALYSIS OF THE AGE DEPENDENCE.

Dix D, Cohen P
Dept. Biology and Health Science, Univ. Hartford, West Hartford, CT, 06117
Anticancer Res; 2(1/2):23-27 1982

Female breast cancer (FBC) incidence was studied as a function of age in 71 different populations throughout the world. Incidence data was normalized for differences in frequency of occurrence. Mean percentage incidence of FBC among all populations studied showed an exponential increase from age 20 to 45 yr; a decrease after age 45 yr suggests an influence of menopause. Populations were not randomly distributed about the total population median normalized incidence at various ages. The populations were then classified according to their age-incidence patterns in three groups with median incidence after age 69 yr of 50%, 47%, and 31% in Group 1, 2, and 3, respectively. At most age intervals, the normalized incidence in the 24 Group 1 populations was less than the total medium, while the normalized incidence in the 26 Group 3 populations was greater than the total median. While the possibility cannot be excluded that the variation in age-incidence patterns among the population groups is an artifact of tumor registration errors, evidence suggests that such an artifact is unlikely. FBC occurs more frequently in Group 1 populations than in Group 3 populations. It is suggested that Group 3 populations may share an element of protection from, or that Group 1 populations may share an element of risk for, breast cancer. (12 Refs)

75. CANCER MORBIDITY IN ULCERATIVE COLITIS.

Prior P, Gyde SN, Macartney JC, Thompson H, Waterhouse JA, Allan RN
Gastroenterology Unit, General Hosp., Birmingham, England
Gut; 23(6):490-497 1982

Cancer morbidity at all sites has been studied in a series of 676 patients with ulcerative colitis under long-term review, of whom more than two-thirds had extensive disease, and the level and pattern of risk over time examined. Age- sex-, and site-specific incidence rates were used to compute the number of cancers that might have been expected to occur. A highly significant excess of cancers was observed overall but the excess was due entirely to cancers of the digestive system. In women there was no excess or deficit of cancers outside the digestive system. In men there was a small deficit of cancers of the respiratory system. An overall 11-fold excess colorectal cancer risk was found in the series compared with that in a relevant general population after patient-years at risk had been corrected for surgical resection and patients with colorectal cancer at their first referral had been excluded. When these data were expressed in an actuarial form the cumulative probability of developing colorectal cancer in the series was 8% (3.5-13%) at 25 yr, after the diagnosis of ulcerative colitis had been established. The relative risk of developing colorectal cancer was highest in those patients developing colitis before the age of 30 yr, and the relative risk fell as the age at diagnosis of their colitis increased. The pattern of risk of colorectal cancer over time suggests that there is an association between cancer and colitis in susceptible individuals and that the level of risk is related to age at onset of colitis. (Author abstract) (16 Refs)

76. COLORECTAL CANCER: RECENT TRENDS.

Fraser P, Adelstein AM
Epidemiological Monitoring Unit, Sch. Hygiene and Tropical Medicine, London, England WC1E 7HT
Recent Results Cancer Res; 83:1-10 1982

Trends in the age, race, and sex distribution of incidence and mortality rates of colorectal cancer in various countries are reviewed. Geographic, ethnic, and regional differences in the distribution of these cancers were apparent. A higher risk is observed in urban populations, in lower social classes, with a greater mortality among males. Low rates of survival make prevention a cause to be vigorously pursued. (12 Refs)

77. EPIDEMIOLOGY OF CANCER OF THE ENDOMETRIUM.

Mahboubi E, Eyler N, Wynder EL
Mahoney Inst. for Health Maintenance, American Health Foundation, New York, NY
Clin Obstet Gynecol; 25(1):5-17 1982

Epidemiology of endometrial cancer is reviewed, with particular emphasis on preventive approaches utilized by the physician and patient. An increase in endometrial carcinoma incidence has been reported along with a decrease in cervical carcinoma incidence. An inverse relationship has been seen with uterine cervix cancer worldwide: where cervical cancer rates are high, endometrial cancer rates are low, and vice versa. The country with the highest incidence of corpus cancer, including endometrial cancer, is the United States, which also has the highest level of fat consumption, while Japan, with the lowest fat consumption level, has the lowest incidence of corpus cancer. The peak age of endometrial cancer in the United States is approx 10-15 yr after the av age of menopause. The incidence in white women in the United States is almost twice that in black women and is higher than in other nonwhite groups. Nonwhite rates have not exhibited the dramatic rise in incidence that has been observed in white women. The incidence of endometrial cancer increased by 34-75% between 1969 and 1973. Etiologic factors may include hormones, obesity, diabetes mellitus, hypertension, and familial disposition. Some of the proposed etiologic factors require substantiation before being regarded as significant. Obese women and those with heightened estrogenic stimulation reflected by heavy menstrual flow are at increased risk. Long-term use of postmenopausal hormone replacement therapy, particularly at high doses, should be avoided if possible. (50 Refs)

78. TRENDS IN CANCER EPIDEMIOLOGY (MEETING ABSTRACT).

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NCIC Epidemiology Unit, University of Toronto, Toronto, Ontario, Canada
American Cancer Society National Conference: The Primary Care Physician and Cancer, June 24-26, 1982, Washington, DC American Cancer Society; :A3 1982

The increase in lung cancer in men has come to an end at younger ages and is slowing at older ages. However, in women the increase continues and by the end of this decade lung cancer may be the most important cause of cancer deaths in women. The incidence of prostate and breast cancer continues to increase but mortality is stable, suggesting changes in diagnostic practices. Mortality from stomach cancer and from cancer of the cervix in women continues to fall. Increasingly it is necessary to recognize the multifactorial causes of cancer, requiring detailed information on lifestyle, occupational and sometimes residential histories to unravel etiology. Physicians need to understand the requirements for access to patients in order to obtain data for studies. Monitoring for unexpected hazards will require record linkage, particularly using the National Death Index. Such sources can be used with preservation of confidentiality while increasing knowledge for primary prevention. (no Refs)

VIRAL FACTORS INVOLVING ENVIRONMENTAL AND OCCUPATIONAL EXPOSURE

79. GENITAL WARTS: RECENT ADVANCES.

Oriel JD
Dept. Genito-Urinary Medicine, Univ. Coll Hosp., London, England
Clin Exp Dermatol; 7(4):361-367 1982

The current clinical status of genital warts is reviewed. Skin warts in general are caused by human papillomaviruses. Evidence indicates that genital warts may be caused by a different strain or strains of these viruses from those that cause other warts. Epidemiological evidence strongly suggests that genital warts are sexually transmitted; an association between maternal genital warts and laryngeal papillomas in infants and young children has been demonstrated. Clinical forms and therapy are discussed. (30 Refs)

POTENTIAL CARCINOGENIC FACTORS RELATED TO MEDICAL TREATMENT

80. PROBLEMS OF DRUG SAFETY: ARISTOLOCHIC ACID.

Hagemann U, Grase R, Thiele A, Bass R, Schonhofer PS
Institut fur Arzneimittel des Bundesgesundheitsamtes, Stauffenbergstr. 13, D-1000 Berlin 30, W. Germany
MMW; 124(25):611-612 1982

Drugs containing aristolochic acid (AA) or extracts of plants of the genus Aristolochia were banned from the market in West Germany because of uncertainty about drug safety. AA consists of two compounds, AA-I and AA-II, both of which have as the basic component 3,4-methylenedioxy-1-nitrophenanthrene-1-carbonic acid. Animal studies have indicated that AA is strongly carcinogenic. Problems of determining a 'no-effect' dosage level are discussed. (8 Refs) (In GER)

81. DES.

Minor LS
West Jefferson Medical Group, Los Angeles, CA
Hosp Physician; 18(7):66-68,70-71 1982

The history of the diethylstilbestrol (DES) hazard, biological effects of DES, the population at risk, and counseling of persons at risk are discussed. DES was prescribed between 1941 and 1971 to prevent miscarriages. The drug was withdrawn from use for this purpose when adverse health effects were found. DES is a synthetic estrogen that acts primarily on the Mullerian system in the fetus. DES inhibits the normal replacement of Mullerian tissue by urogenital epithelium as the fetus develops. Women who received DES and children who were exposed to DES in utero may show adverse effects of DES. In

males exposure to DES may result in developmental anomalies in the urogenital system. No cancers in males have been linked to DES. In daughters of women who received DES, the effects of DES include visible abnormalities of the cervix (cockscomb, hooded, or snub-nose exocervix or pseudopolyps) or vagina (fibrous bands, obliteration of the fornices, narrowing of the apices, or constriction rings). Daughters may also show increased tendency to suffer miscarriage or premature delivery. Abnormalities that require special measures for detection include adenosis, clear-cell carcinoma, cervical erosion, and mucosal abnormalities. Persons at risk require special counseling and monitoring. DES is still in use for purposes other than prevention of miscarriages. (9 Refs)

82. THE ASSOCIATION OF PRIMARY HEPATOCELLULAR CARCINOMA (PHC) WITH HBSAG POSITIVITY IN ASIAN PATIENTS ON HORMONAL CONTRACEPTIVE AGENTS IN SINGAPORE (MEETING ABSTRACT).

Oon CJ, Tsakok M, Singh R
University Department of Medicine, Singapore General Hospital, Singapore, Singapore
Asian Pacific Association for the Study of the Liver and International Association for the Study of the Liver, February 7-12, 1982, Kowloon, Hong Kong. Asian Pacific Association for the Study of the Liver and International Association for the Study of the Liver 110 pp., 1982.

Between 1979 and 1981 an ongoing prospective study was made on 236 female individuals on hormonal contraceptive agents (HCA). The objective was to determine the relationship between HCA and incidence of PHC in HCA takers and nontakers in an environment where the natural hepatitis B carrier rate in adult asymptomatic females was about 8% (by radioimmunoassay). Patients' sera were tested for alpha-fetoprotein (AFP) by CIE which in our laboratories has a detection limit of 80 ng/ml. Other tests included alpha 1 antitrypsin, Hepatitis B surface antigen (AUSRIA-II), anti-Hepatitis B core (anti-HBc) antigen (CORAB). The age group of study was 21-51 yrs, median 32 yrs; 3/236 (1.3%) HCA had PHC. These were 3 Chinese women between the ages of 26-29 yrs. The overall annual age specific incidence rates for PHC in Singapore for females aged 25-29 yrs is 0.172 per 100,000. Also 1,000 matched females non-HCA group showed no evidence of PHC over this period of study. Twenty-four HCA patients were HBsAg positive. All 3 PHC patients (13%) were HBsAg, anti-HBc positive. No PHC were seen in the other races - Malays (16), Indians (11) and others (3). One hundred and twelve of 236 (48%) were anti-HBc positive. The HCA taken were Nordette 85, Microgynon 14, Eugynon 36, Neogynon 26, Ovral 26, Gynovlar 6, Ovalen 2, Anovlar 10, New Lyndiol 10, Norethisterone 1, Lyndiol 1, Depoprovera 3. Ovral, Anovlar, Gynovlar and Ovalen were the HCA used by the PHC patients. Chinese females who are HBsAg positive appear to be at higher risk of having PHC than HBsAg negative females on HCA. (no Refs)

83. CHEMICAL PHOTOTOXICITY IN HUMANS.

Epstein JH
450 Sutter St. 1306, San Francisco, CA, 94108
JNCI; 69(1):265-268 1982

Phototoxic reactions may be induced by endogenous or exogenous chemicals. Endogenous photosensitizers made by the body include porphyrin molecules which are responsible for the photocutaneous syndromes noted in the porphyrias. Exogenous photosensitizers may arrive on the skin through topical applications or may be distributed through the vasculature. Topical photosensitizers are found in cosmetics, medications, plants, and industrial and air pollutant emissions. Systemic photosensitizers consist primarily of therapeutic agents. Acute and chronic phototoxic reactions may occur. The acute response is generally characterized by erythema and edema followed by hyperpigmentation and desquamation. The end point of chronic damage may be cutaneous cancer formation. The mechanisms of these changes may well relate to nucleic acid injury, protein and membrane damage, and alterations in other nuclear and cytoplasmic molecular structures. However, translation of experimental information into human responses remains to be clarified. A great deal of investigation is still needed in developing assays for detecting phototoxic chemicals and for defining mechanisms involved in phototoxic events in human skin. (Author abstract) (38 Refs)

84. THERAPEUTIC IN VIVO PHOTOCHEMISTRY: PHOTOCHEMICAL TOXICITY STUDIES IN HUMANS.

Parrish JA
Dept. Dermatology, Harvard Medical Sch., Massachusetts General Hosp., Boston, MA, 02114
JNCI; 69(1):273-278 1982

Information obtained by studies of phototherapy and photochemotherapy is reviewed and some of the advantages and disadvantages of using in vivo photochemistry to treat disease are examined. Selective in vivo photochemistry is used to treat a variety of diseases. Study of the dosimetric aspects of these treatments and quantitative analysis of acute risks are instructive to individuals interested in photochemical toxicity in humans. Results from prospective short-term and long-term clinical trials are especially instructive because the model used is the intact living human. These studies provide important data about toxic, allergic, and carcinogenic aspects of photochemical toxicity, which could not be obtained in routine animal toxicity experiments. Work done to develop, explain, or improve these treatments also provides insight into molecular mechanisms of photon-induced cell injury and the sequelae of that injury. (Author abstract) (30 Refs)

85. IATROGENIC COLONIC CANCER? (MEETING ABSTRACT).

Junghanns K
Chirurgische Universitatsklinik Heidelberg, Heidelberg, W. Germany
IXth Biennial Congress of the International Society of University Colon and Rectal Surgeons, June 6-10, 1982, Munich, W. Germany. Society of University Colon and Rectal Surgeons 175 pp., 1982.

There are three possibilities for iatrogenic colonic cancer; 1) after resection, 2) colostomy cancer, 3) after cholecystectomy. Experimental investigations in 243 animals with colon resections and chronic application of Dimethylhydrazine subcutaneously support the theory that irritation of the colonic mucosa by suturing or chronic laceration increases the risk of cancer. After colostomies in rats and application of Dimethylhydrazine and Methylnitrosamine 69 and 62% of the animals have a colostomy cancer after a very short inducton time. In 64 controls no cancer was seen. Epidemiologic and statistical as well as experimental studies show increasing evidence that cholecystectomy predisposes to colonic cancer especially of the right side. Clinically this can be supported but it is not the cholecystectomy that can be incriminated, it is the underlying cholecystopathy. There is no such thing as iatrogenic colonic cancer; there are pathologic conditions and sequela of life saving operations that may increase the risk of colonic cancer. (no Refs)

86. IS THERE AN INCREASED RISK FOR COLON CANCER AFTER CHOLECYSTECTOMY? (MEETING ABSTRACT).

Schmaus AK, Ehrhardt U
No affiliation given
IXth Biennial Congress of the International Society of University Colon and Rectal Surgeons, June 6-10, 1982, Munich, W. Germany. Society of University Colon and Rectal Surgeons 175 pp., 1982.

Based on clinical observations an increased risk of Colon Cancer in cholecystectomized patients was discussed. Changes in the secretion of bile into the bowel and the transformation of bile-salts into carcinogens were thought to be responsible. Twenty-four thousand eighty nine autopsy reports from 1956-1979 from the Institute of Pathology, Hospital Friedrichshain, Berlin, were examined. We found 761 colorectal cancers - 3.16%, stones in the biliary tract in 7436 equal 30.9% and 662 equals 2.4% a cholecystectomy (503 older than one year). In cases without gall-stones and without a previous cholecystectomies colo-rectal cancers were present in 2.97%, in cases with gall-stones in 3.57%, in cases with cirrhosis of the gall-bladder in 4%, and in cases with cholecystectomies, more than one year before the death in 3.38%. In cases with gall-stones, cholecystectomies and gall-bladder cirrhosis there were more cancers in the right half of the Colon. No relations between cholecystectomies and colo-rectal cancers could be found. But it seems, that kind of Synetiology for gall-stones and colorectal cancer exists. (no Refs)

87. NEOPLASMS OF THE VAGINA FOLLOWING CERVICAL CARCINOMA.

Choo YC, Anderson DG
Div. Gynecologic Oncology, Dept. Obstretrics and Gynecology, Univ. Michigan Hosp., Ann Arbor, MI, 48109
Gynecol Oncol; 14(1):125-132 1982

Neoplasm in the vagina which occurs following treatment of cervical carcinoma could represent a separate primary neoplasm, a 'field' response to a common carcinogen, or be due to neoplastic transformation of tissue from previous radiation treatment. Fifty patients with a second neoplasm in the vagina were identified: 17 following total hysterectomy for carcinoma in situ of cervix; 4 following radical hysterectomy; and 29 following radiotherapy for invasive cervical carcinoma. Their clinical features, diagnosis, and treatment modalities are presented. Since vaginal neoplasm may occur long after treatment of the initial cervical carcinoma especially after previous radiotherapy, life-long follow-up of all patients with cervical carcinoma is mandatory. (Author abstract) (28 Refs)

PUBLIC POLICY INVOLVING ENVIRONMENTAL OCCUPATIONAL CARCINOGENS

88. TECHNOLOGIES FOR DETERMINING CANCER RISKS FROM THE ENVIRONMENT (MEETING ABSTRACT).

Gough M
No affiliation given
1st World Congress on Toxicology and Environmental Health, May 27-30, 1982, Washington, D.C. American College of Toxicology 11 pp., 1982.

For many people, the main point of toxicology is to identify health hazards. For the Federal regulator, the industry official responsible for health, and, most of all, for economists who like to balance things, toxicology is expected to provide the raw material for quantifying human health risks. Most important, toxicology, along with other sciences, promises a better understanding of the mechanisms underlying health risks from toxic substances. Developments in methods to identify carcinogens stem both from investigator interest and curiosity and from the interests of the people who use toxicologic results. Emphasis on structural activity relationship analysis for making decisions about potential health risks from new substances is likely to engender constant interest in those techniques and to provide additional data about their usefulness. After several years of discussion about the uses and limitations of short-term tests, attention appears to be focussing on the use of those tests for making decisions about entering a substance on bioassay. The long struggle to produce and verify extrapolation models for making predictions of human risk will be aided by results from in vivo studies of toxic mechanism. Direct measurement of DNA damage and repair in different organs and organisms will improve understanding of metabolic pathways and species differences and provide more information for making risk assessments. The chronic bioassay, as practiced by the Federal government, is expected to change from the long-used 3 dose study to 4 doses with interim sacrifice. The new model was championed on the basis that it would yield better data for extrapolation. The White House is developing principles for regulatory decision making about carcinogens, which will require consideration of negative as well as positive results. At still another level, the value of weakly positive bioassay results is frequently questioned. In some measure, these questions, well worth asking, further erode the already limited value attached to bioassays by the public. (no Refs)

89. THE MANAGEMENT OF POPULATIONS AT HIGH RISK IN THE CHEMICAL INDUSTRY.

Samuels SW, Utidjan HM, Maltoni C, Rauscher FJ, Johnson M
Industrial Union Dept., American Federation of Labor-Congress of Industrial Organizations, 815 16th St. NW, Washington, DC, 20006
Ann NY Acad Sci; 381:328-343 1982

Prevention and intervention as strategies for management of high risk worker populations in the chemical industries are discussed. The total number of workers in high-risk populations in the chemical industry is impossible to estimate due to such factors as changes in production processes, products, and worker location. The lack of an industry-wide program of intervention may cause hundreds of thousands of workers at high risk to die of cancer and other irreversible diseases. Only some workers in high-risk populations actually develop cancer, depending upon factors of individual biology and individual environment, such as heredity, duration and intensity of exposure, differences in biological activities of toxic agents or their metabolites, mode of exposure and occurrence of multiple exposures. The long latency period between time of initial exposure to a chemical agent and ultimate development of malignant disease, which is typical of chemically induced chronic disease, may offer an opportunity for intervention before disease becomes manifest. Treatment with cholestyramine to increase the rate of bodily elimination of kepone is an example of a successful intervention of this type. An effective and efficient intervention program must include medical, counseling, compensation, legal, and psychological support elements. The use of genetic selection of potentially high-risk workers to restrict their exposure does not eliminate the need to protect the nonsusceptible workers. (22 Refs)

90. LEUKEMIA AND BENZENE.

Rosenstock L
Robert Wood Johnson Clinical Scholars Program, Univ. Washington, Seattle, WA
Ann Intern Med; 97(2):275-276 1982

Clinical reports of benzene-induced leukemia and difficulties in proving a direct relationship between benzene and leukemia are discussed. Part of the reluctance in accepting the relationship comes from the difficulty in producing an animal model of benzene's carcinogenicity. The relationship among benzene, legislation regulating the chemical, and occupational health is discussed. (10 Refs)

91. EVOLUTION OF THE CONCEPTS AND STANDARDS OF RADIATION PROTECTION.

Xie Z
Inst. Nuclear Energy Academia Sinica, People's Republic of China
Zhonghua Fangsheyixue Yu Fanghu Zazbi; 1(1):2-12 1981

A review of the historical change in the concept of radiation protection and the establishment of criteria for protection is presented. The works and activities of the International Committee on Radiation Protection (ICRP) and the American National Committee on Radiation Protection are discussed. The new proposal of ICRP and some difficult problems are also discussed. Some controversy on the present basic criterion on radiation protection and future prospects is described. works are presented. (38 Refs) (In CHI)

ANALYTICAL AND METHODOLOGICAL ASPECTS OF CANCER EPIDEMIOLOGY

92. REPORT OF A PILOT PROJECT IN MOLECULAR EPIDEMIOLOGY: A PRELIMINARY STUDY OF CARCINOGEN-DNA ADDUCTS IN HUMAN SUBJECTS.

Perera FP
Columbia University, New York, NY
Diss Abstr Int [B]; 42(9):3641-B 1982

This is a report of a pilot project to assess the feasibility of using an assay for the occurrence of benzo(a)pyrene-DNA adducts as a dosimeter in future molecular epidemiological investigations of cancer causation. Benzo(a)pyrene (BaP) is a significant and increasingly pervasive environmental carcinogen linked primarily with increased risk of lung cancer in humans. Because interaction between the chemical carcinogen and DNA is presumably a critical early event in tumorigenesis, the assay for BaP-DNA adducts could be a particularly relevant dosimeter in human studies. Samples of lung tissue and peripheral blood cells from a small number of hospital patients with and without lung cancer were assayed using an antibody for BaP-DNA adducts hitherto applied only to cultured human cells exposed to BaP in vitro. A questionnaire was administered to patients or next of kin in order to elicit detailed histories of exposure to BaP and to agents capable of modifying metabolism and DNA binding of BaP. DNA samples from a number of subjects, all lung cancer cases, appeared to be positive in the assay. Primarily because of the small numbers studied and the limited number of controls (patients without lung cancer), no conclusions regarding significance could be drawn from these results; nor did a clear pattern emerge between exposure histories and occurrence of the DNA adduct. Nonetheless, the pilot project demonstrated the potential usefulness of both the assay and the questionnaire and provided a basis for future molecular epidemiological study. Finally, more general aspects of the questionnaire were recommended as additions to the hospital-based cancer research data system. (no Refs)

93. ON A METHOD OF MORTALITY ANALYSIS INCORPORATING AGE-YEAR INTERACTION, WITH APPLICATION TO PROSTATE CANCER MORTALITY.

James IR, Segal MR
Dept. Mathematics, Univ. Western Australia, Nedlands 6009, Australia
Biometrics; 38(2):433-443 1982

A model used in the analysis of tabular mortality data (or incidence data), in which deaths are classified by age and year of occurrence, is shown to arise from the assumption that effects due to epoch of birth (the cohort effects) act multiplicatively on an underlying hazard function which may change with calendar year. The model disentangles the cohort effects and the effects due to epoch of death (year effects) and age at death (age effects), and incorporates an age-year interaction which has an interpretation in terms of changing the shape of the underlying hazard function. In addition, the derivation of the hazard function suggests meaningful interpretation of certain combinations of the model parameters. As an illustration, application of the model to prostate cancer mortality in England and Wales indicates, among other things, that after allowing for the changing cohort effects, the risk for young men has increased relative to that for older men in recent years. (Author abstract) (27 Refs)

94. A POPULATION-BASED MODEL OF RESPIRATORY CANCER INCIDENCE, PROGRESSION, DIAGNOSIS, TREATMENT, AND MORTALITY.

Manton KG, Stallard E
Dept. Community and Family Medicine, Duke Univ. Medical Center, Durham, NC, 27706
Comput Biomed Res; 15(4):342-360 1982

A stochastic compartment model of the natural history of respiratory disease processes in human populations is presented. In the model, each of five health states defines a compartment: a well state where one is free of disease, a 'preclinical' tumor growth state, a clinical tumor treatment state, a lung cancer death state, and other causes of death state. The transitions between compartments are probabilistic and are assumed to be instantaneous. Other components involve lung cancer incidence, lung tumor growth, and lung cancer treatment. A second section presents the likelihood function used to obtain parameter estimates as well as the approximating equation for double convolution. Finally, an example of application of the model to national cause-specific mortality data for United States white males (1950-1977), is presented. The methodology employs auxiliary evidence from clinical and epidemiological studies to structure the model which makes it possible to infer unobserved morbidity transition rates from a population-based mortality time series for selected cohorts. Expression of a double convolution equation as a sum of a finite number of terms makes it possible to calculate maximum likelihood estimates of parameters representing transitions through three stages in the natural history of the disease process. (11 Refs)

95. RISK FACTORS IN GLIOBLASTOMA DEVELOPMENT (MEETING ABSTRACT).

Hochberg FH, Cole P, Salcman M, Kadish SP, Glicksman A, Saunders R, Toniolo P, Taylor L
No affiliation given
Neurology; 30(4,part2):A75 1982

We report the results of a case-control study to delineate risk factors in the development of glioblastoma (astrocytoma grade 3/4). This study makes use of a 45-page self-administered, non-self-coding questionnaire distributed to cases with histologic verification of tumor and same sex 'best friend' controls (within 5 years of age and 100 miles of domicile of cases). Questionnaire completeness is assured by telephone follow-up. Keypunch and encoding error rates are less than 0.5% as determined by reencoding of selected fields from each of the 225 patients and 176 controls. These selected fields include: (1) family socioeconomic data; (2) family cancer histories; (3) trauma history; (4) neurologic illness history; (5) psychiatric history; (6) headaches; (7) prior seizure activity; (8) past medical history; (9) parental occupation and environmental exposures; and (10) patient occupation and environmental exposures. Initial analyses have indicated increased risk of tumor development for individuals with: (1) single unit dwellings; (2) low socioeconomic status; (3) less education than controls; (4) below-average academic achievement; (5) learning disability; (6) head injury; (7) prior seizure activity; (8) long-term psychoses; (9) exposure to fumes and dusts; (10) radiation exposure; and (11) pesticide exposure. Relative risk data for these potential risk factors will be presented and discussed in the light of recent experience with clustered glioblastoma cases. (no Refs)

GENERAL AND MISCELLANEOUS FACTORS

96. ENVIRONMENTAL CARCINOGENS. JANUARY, 1979-FEBRUARY, 1981 (CITATIONS FROM THE NTIS DATA BASE).

National Technical Information Service
Springfield, VA
Environmental Carcinogens. January, 1979-February, 1981 (Citations from the NTIS Data Base). Available from National Technical Information Service, Springfield, VA, as PB82-807389:, 291 pp., 1982.

The bibliography cites research reports on the identification, sources, and toxicity of environmental carcinogens. Included are studies on pesticides, fire extinguishing agents, environmental pollutants, food additives, radiation, and other known or suspected carcinogenic substances. (This updated bibliography contains 285 citations, none of which are new entries to the previous edition). (Author abstract)

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NOTICE OF CURRENT REVIEWS: CARCINOGENESIS

As an additional service to readers of carcinogenesis (CK series) CANCERGRAMS, each issue now provides a bibliography of review articles of interest to carcinogenesis researchers, selected from journals screened for that month's CANCERGRAMS.

CHEMICAL CARCINOGENESIS

1. CURRENT APPROACHES TO THE EXPERIMENTAL INVESTIGATION OF CHEMICALS IN RELATION TO CANCER OF THE BRAIN.

Swenberg JA, Zimmerman HM, Maltoni C, Kurland L, Laerum OD, Kleihues P, Selikoff I, Heidelberger C
Chemical Industry Inst. Toxicology, Research Triangle Park, NC, 27709
Ann NY Acad Sci; 381:43-53 1982

2. PRODUCTION OF BRAIN TUMORS WITH AROMATIC HYDROCARBONS.

Zimmerman HM
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